2010 Urban Water Management Plan

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4S WRF	4S Ranch Water Reclamation Facility
AB	Assembly Bill
AF	Acre feet (1 AF=325,851 gallons of water)
Act	Urban Water Management Planning Act
AMR	Automated Meter Reading (System)
AWWA	American Water Works Association
Baseline	Base daily per capita water use
BDCP	Bay Delta Conservation Plan
BMP(s)	Best management practice(s)
BiOp	Biological Opinion
CAC	Conservation Action Committee
CVP	Central Valley Project
CII	Commercial, industrial, and institutional
CIRC	Cooperative Interagency Resources Coalition
CMP	Comprehensive Potable and Recycled Water Master Plan
CRA	Colorado River Aqueduct
CSD	Community Services District
CSP	Capital Spending Plan
CUWCC	California Urban Water Conservation Council
CWA	San Diego County Water Authority
CWC	California Water Code
DAC	Disadvantaged Communities
DCMWTP	David C. McCollom Water Treatment Plant
Delta	Sacramento–San Joaquin Bay-Delta
DMM(s)	Demand management measure(s)
DWR	California Department of Water Resources
EDU	Equivalent Dwelling Units
EIR	Environmental Impact Report
ERP	Emergency Response Plan
FY	Fiscal Year (as opposed to a calendar reporting year or CY)
GHG	Greenhouse gas
GM	General Manager
GPCD	Gallons per capita per day
IID	Imperial Irrigation District
IRWM	Integrated Regional Water Management (Plan)
LRP	Local Resources Program
LT2 ESWTR	Long Term 2 Enhanced Surface Water Treatment Rule
M&I	Municipal and Industrial
MAIN	U.S. Army Corps of Engineers Municipal And Industrial Needs (model)
Method 4	Urban Water Use Target Method 4
MGD	Million Gallons per Day
MHI	Median Household Income
MOU	Memorandum of Understanding
MSCP	Colorado River Multi-Species Conservation Program
MWD	Metropolitan Water District of Southern California
NIMS	National Incident Management System

NMFS	National Marine Fisheries Service
NWQ	Northwest Quadrant
OMWD	Olivenhain Municipal Water District
Ordinance 173	OMWD's Non-Potable Water Ordinance 173
UWMP	Urban Water Management Plan
SANDAG	San Diego Association of Governments
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition (Systems)
State Water Board	State Water Resources Control Board
SWP	State Water Project
USBR-MP	United States Bureau of Reclamation – Mid-Pacific Region
UUSFWS	U.S. Fish and Wildlife Service
UWMP	Urban Water Management Plan
WAEC	Water Agency Emergency Cooperative
WUSMA	Water Utility Safety Manager Association

Definitions

Base Daily Per Capita Water Use - In accordance with Part 2.55 of the California Water Code (CWC) (herein referred to as the "Water Conservation Bill of 2009" or "SBX7-7"), Section 10608.12(b), base daily per capita water use means any of the following, (unless otherwise specified herein):

> (1) The urban retail water supplier's estimate of its average gross water use reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
>
> (2) For an urban retail water supplier that meets at least 10 percent of its 2008 measured retail water demand through recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier, the urban retail water supplier may extend the calculation described in paragraph (1) up to an additional five years to a maximum of a continuous 15-year period ending no earlier than December 31, 2004, and no later than December 31, 2010.
>
> (3) For purposes of Section 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

The California Department of Water Resources (DWR) has summarized this definition in its *Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan* (March 2011) (hereafter the DWR Guidebook). There, DWR describes "baseline daily per capita water use" as the quantity of water used within an urban water supplier's distribution system area on a per capita basis, which is determined using water use and population estimates from a defined range of years. As further explained by the DWR Guidebook, two baseline periods are to be determined during the calculation of the base daily per capita water use, where the Water Conservation Bill of 2009 provides some flexibility in what actual periods of time are used to establish these baselines. This allows for short-term water demand variations resulting from weather influences, as well as acknowledging the advances of water suppliers that have already begun using recycled water to reduce potable demands. The two baseline periods are:

- 10- to 15-year base period. This is a 10-year or 15-year continuous period used to calculate baseline per capita water use. For this purpose, OMWD is using a 10-year base period using the fiscal years including 1999 through 2008.

- 5-year base period. This is a continuous 5-year period used to determine whether the 2020 per capita water use target meets the legislation's minimum water use reduction requirements of at least a 5 percent reduction per capita water use. For this purpose, OMWD is using a 5-year base period using fiscal years including 2004 through 2008.

Fiscal Year - A year may be calculated as a calendar year from January through December or as a fiscal year (FY) from July through June. OMWD operates on a fiscal year basis and data is presented using that timeline.

Urban Water Use Target - OMWD's targeted future daily per capita water use, as further set forth herein. The DWR Guidebook further describes an "urban water use target" as the quantity of water

planned to be delivered in 2020 to each resident within an urban water supplier's distribution system area, taking into account water conservation practices that are currently in place and those that are planned for implementation.

Interim Urban Water Use Target - The midpoint between OMWD's base daily per capita water use and its urban water use target for 2020. The DWR Guidebook describes an "interim urban water use target" as the planned daily per capita water use in 2015, a value halfway between the baseline daily per capita water use and the urban water use target.

Drought/Water Supply Shortage - OMWD uses the term "Water Supply Shortage" when discussing supply restrictions in order to reflect other causes of water shortages, such as environmental restrictions. "Drought" is used when referring to a climatic supply limitation or when referring to other agency programs, plans and documents that use the term "drought" for water supply limitations due to multiple factors including climate.

Conservation/Water Use Efficiency - OMWD began using the term "water use efficiency" when discussing water conservation efforts in 2010. OMWD education and outreach focuses on the efficient use of water at all times. The terms are used interchangeably throughout the UWMP.

Chapter 1

Introduction and Background

Olivenhain Municipal Water District (OMWD) has prepared this 2010 Urban Water Management Plan (UWMP) to guide its conservation and water resource management programs and to comply with state law. OMWD chose to update and restructure its existing 2005 UWMP, amended and adopted on January 23, 2008, to facilitate the Department of Water Resources (DWR) review process.

According to California Water Code (CWC) § 10610.2(a) (2), "[t]he conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level." Similarly, CWC § 10608(h) provides that "[t]he factors used to formulate water use efficiency targets can vary significantly from location to location based on factors including weather, patterns of urban and suburban development, and past efforts to enhance water use efficiency."

OMWD is a public agency organized under CWC § 71000, et seq. and is comprised of a five-member, publicly elected Board of Directors and appointed General Manager (GM) committed to its customers. Consistent with this commitment, OMWD has established the following policy relative to conservation and efficient use of urban water supplies.

> *"OMWD strives to balance the needs of its customers, water resources management, water use efficiency, a reliable water supply, local storage, and water quality issues in the most economically feasible manner."*

The 2010 UWMP serves as a long-term planning document to ensure a reliable water supply at the local level. OMWD has made great strides in implementing 2005 UWMP strategies, diversifying supplies and promoting water use efficiency, and with continued efforts in reducing water use and aggressively pursuing alternate sources of water such as recycled water, OMWD plans to achieve even greater potable water savings. A complete evaluation and update of the resource management strategies in this UWMP will occur every five years, with annual review performed by OMWD to track progress and consider any unanticipated factors in supply reliability.

1.1 Urban Water Management Planning Background

The Urban Water Management Planning Act (CWC §§ 10610 – 10656) (hereafter referred to as the Act) requires urban water suppliers to report, describe, and evaluate various aspects of their water resources and plans for providing water service, such as:

- Water deliveries and uses
- Water supply sources
- Efficient water uses
- Demand Management Measures (DMMs), including implementation strategy and schedule

In addition, the passage of Senate Bill (SB) X7-7 (CWC § 10608 et seq.) (hereafter referred to as the Water Conservation Bill of 2009) requires urban retail water suppliers to determine and report various technical information in their UWMPs that is geared toward helping achieve the goal of the

Water Conservation Bill of 2009 to reduce statewide per capita urban water use, such as base daily per capita water use (baseline) which is also commonly referred to as gallons per capita per day (GPCD), 2020 urban water use targets, 2015 interim urban water use targets, and compliance with daily per capita water use quotas.

The Act directs water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies are available to meet existing and future demands. Urban water suppliers are required to assess current demands and supplies over a 20-year planning horizon (with an additional 5-year option) and consider various drought scenarios. Among other things, the Act also requires water shortage contingency planning and drought response actions to be included in an UWMP.

UWMPs are to be prepared every five years by urban water suppliers, which are defined by the Act as water suppliers providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water per year. The normal UWMP submittal cycle requires that they be updated at least once every five years on or before December 31 in years ending in five and zero. However, because of recent changes in UWMP requirements, state law has extended the deadline by which agencies must adopt their 2010 UWMPs to July 1, 2011. Although submitted in 2011, 2010 UWMPs will be referred to as 2010 UWMPs because they include 2010 water data and to retain consistency with the five-year submittal cycle under the Act.

Based on legislative changes resulting from the passage of the Water Conservation Bill of 2009, UWMPs are also intended to assist water agencies and, in turn, the State of California to set targets and track progress toward decreasing daily per capita urban water use throughout the state.

Completion of an UWMP, including discussion of the status of a water supplier's implementation of DMMs, is required for an urban water supplier to be eligible for a water management grant or loan administered by DWR, the State Water Board, or the Delta Stewardship Council (CWC § 10631.5(a)). A current UWMP must also be maintained by the water supplier throughout the term of any grant or loan administered by DWR.

1.2 Recent Changes to the UWMP Act

Primary changes to UWMP requirements since 2005 address water conservation (e.g., through the Water Conservation Bill of 2009) and DMMs (through AB 1420), but there are several other changes in the CWC requirements. Some notable changes to the Act, including additions under the Water Conservation Bill of 2009, are discussed in the DWR Guidebook and the DWR Methodologies for Calculating Baseline and Compliance Urban Per Capita Water Use (February 2011) (hereafter referred to as the DWR Methodologies) and are summarized below.

According to the DWR guidebook and DWR Methodologies, there are four overall steps a water supplier completes to meet the 2010 UWMP requirements identified in the Water Conservation Bill of 2009:

- Step 1: Determine Base Daily Per Capita Water Use
- Step 2: Determine Urban Water Use Target
- Step 3: Compare Urban Water Use Target to the 5-year Baseline
- Step 4: Determine Interim Urban Water Use Target

Appendix A contains the text of the final DWR Guidebook to Assist Urban Water Suppliers to Prepare a 2010 Urban Water Management Plan, which includes the DWR Methodologies, the Act, the Water Conservation Bill of 2009, and other relevant information.

Chapter 2

UWMP Preparation

The purpose of the UWMP is to demonstrate the adequacy and reliability of OMWD's water supply over the next 25 years in conjunction with regional UWMPs being developed by the San Diego County Water Authority (CWA) and Metropolitan Water District of Southern California (MWD). The UWMP also ensures that details on the reliability of OMWD's imported water supplies are provided to the San Diego region.

2.1 Coordination and Notification

Reasonable consistency among the plans of water wholesalers MWD and CWA and their member agencies' plans is important to accurately identify the projected supplies available to meet regional demands. In order to facilitate coordination within CWA's service area, CWA formed an Urban Water Management Plan Working Group of which OMWD was a participating member. This group provided a forum for exchanging both regional and local demand and supply information. Among many other coordination efforts, OMWD provided CWA its supply projections and worked with CWA on revising final regional projections. CWA further coordinated with MWD regarding projected needs for imported water deliveries. As additional examples of the coordination process, OMWD participated in the webinar hosted by DWR on November 30, 2010, and a workshop held at CWA on March 7, 2011, to review the requirements of the Act. OMWD's GM attended all CWA GM meetings which provided monthly updates on UWMP preparation.

OMWD coordinated the preparation of its UWMP with appropriate local agencies, including other water suppliers that share a common source, water management agencies and relevant public agencies, to the extent practical. Notification of the update of the 2005 UWMP was sent out more than 60 days prior to the public hearing to all water management agencies, wastewater agencies, and cities in and adjacent to OMWD's service area. Notice was also sent to the County of San Diego and the Business Industry Association. Please refer to **Table 1** on the following page for additional information on OMWD's coordination process.

The draft UWMP was made available on OMWD's website, on CD, and in hardcopy form beginning on May 10, 2011. Within 30 days of the adoption of the final UWMP, copies will be sent to DWR, the California State Library, all cities within OMWD's service area, and the County of San Diego. Specifically, copies of the water service reliability portion of the final UWMP will be provided to the County and all cities within which OMWD provides water service. Furthermore, within 30 days of filing the final UWMP with DWR, the UWMP will be posted on OMWD's website and available to review in hardcopy form at the OMWD offices during normal working hours.

Table 1 Coordination with appropriate agencies						
Coordinating Agencies	Participated in developing the plan	Commented on the draft	Attended public meetings	Was contacted for assistance	Was offered a copy of the draft plan in three forms	Was sent a notice of intention to adopt
Other water suppliers						
Carlsbad Muncipal Water District					x	x
San Diegutio Water District	x				x	x
City of San Diego					x	x
Vallecitos Water District	x				x	x
Rincon del Diablo Water District	x				x	x
Santa Fe Irrigation District	x				x	x
Wastewater agencies						
Encina Wastewater Department				x	x	x
Fairbanks Ranch CSD		x		x	x	x
San Elijo Joint Powers Authority				x	x	x
Leucadia Wastewater District				x	x	x
Rancho Santa Fe CSD		x		x	x	x
Whispering Palms CSD		x		x	x	x
Water management agencies						
San Diego County Water Authority	x			x	x	x
Relevant public agencies						
City of Del Mar					x	x
City of Encinitas					x	x
City of Escondido					x	x
City of Poway					x	x
City of San Diego						
County of San Diego					x	x
City of San Marcos					x	x
City of Solana Beach					x	x
San Diego Association of Governments					x	x
San Diego LAFCO					x	x
General public					x	x
Other						
Department of Water Resources		x		x	x	
State Clearing House					x	x
Buildings Industry Association					x	x

2.2 Public Hearing and Adoption

In accordance with applicable provisions of the Act, the Water Conservation Bill of 2009, and the notice procedures of California Government Code Section 6066, OMWD's Board of Directors held a public hearing on May 25, 2011 at 8:30 a.m. and adopted OMWD's UWMP at the June 22, 2011 Board meeting. Copies of the public hearing notices, plan preparation notices, resolution approving the UWMP, and minutes of the May and June meetings are included in **Appendix B**. Prior to adoption, the 2010 UWMP was available for review by the public and other agencies at OMWD's offices and on the OMWD website at www.olivenhain.com.

DWR prepared a checklist of items based on the Act that must be addressed in an agency's plan. This checklist allows an agency to identify where in its plan it has addressed each item. OMWD has completed a checklist, referencing the sections and page numbers included in the 2010 UWMP. This completed checklist will be sent to DWR to facilitate the reviewing process.

2.3 Related Plans and Programs

OMWD completed a 2010 Comprehensive Potable and Recycled Water Master Plan (CMP) which was adopted by its Board of Directors on March 23, 2011. The CMP is a water management tool that OMWD uses to plan future facilities, budget accordingly, and reduce the need to import water. A copy of the CMP is included as **Appendix C**.

OMWD conducted a 2020 Vision Workshop with the Board of Directors in 2005 that outlined a path as to what OMWD would look like in twenty years. This plan provided insight to the Board and staff in considering staffing and facilities planning for the future. The 2020 Vision Plan was incorporated into the OMWD Strategic Plan which is visited annually for goal setting by the Board and quarterly for updates on progress.

The Board tasked staff with developing a Cooperative Interagency Resources Coalition (CIRC), which is a coalition that develops relationships in order to share services/products/resources among San Diego County water agencies, thereby saving public funds. Participating agencies include fire departments, water and sewer districts, public utilities, and cities. CWA facilitates cooperative efforts via CIRC. For more information about CIRC, please contact CWA directly at 858-522-6600 or visit www.sdcirc.org.

OMWD saved funds in Calendar Year 2010 via CIRC partnerships in the following areas:

- Safety/Risk Compliance Administrator attended National Incident Management System/ Standardized Emergency Management System/Incident Command System Emergency Operations Center three-day course in June with City of Encinitas, Rancho Santa Fe Fire Protection District, San Diego Regional Urban Area Security Initiative, and California Emergency Management Agency.
- Hosted five landscape workshops with San Dieguito Water District and Santa Fe Irrigation District.
- Hosted two gardening workshops with Carlsbad Municipal Water District and Vallecitos Water District.
- Shared booth with San Dieguito Water District at four community events.
- Cooperated with Sweetwater Authority on employee dog training exercise.
- Continuing participation in North San Diego County Regional Recycled Water Project, which is a cooperative with seven other agencies to study greater interconnection and development of northern San Diego County's recycled water infrastructure.

2.3.1 California Water Plan Update

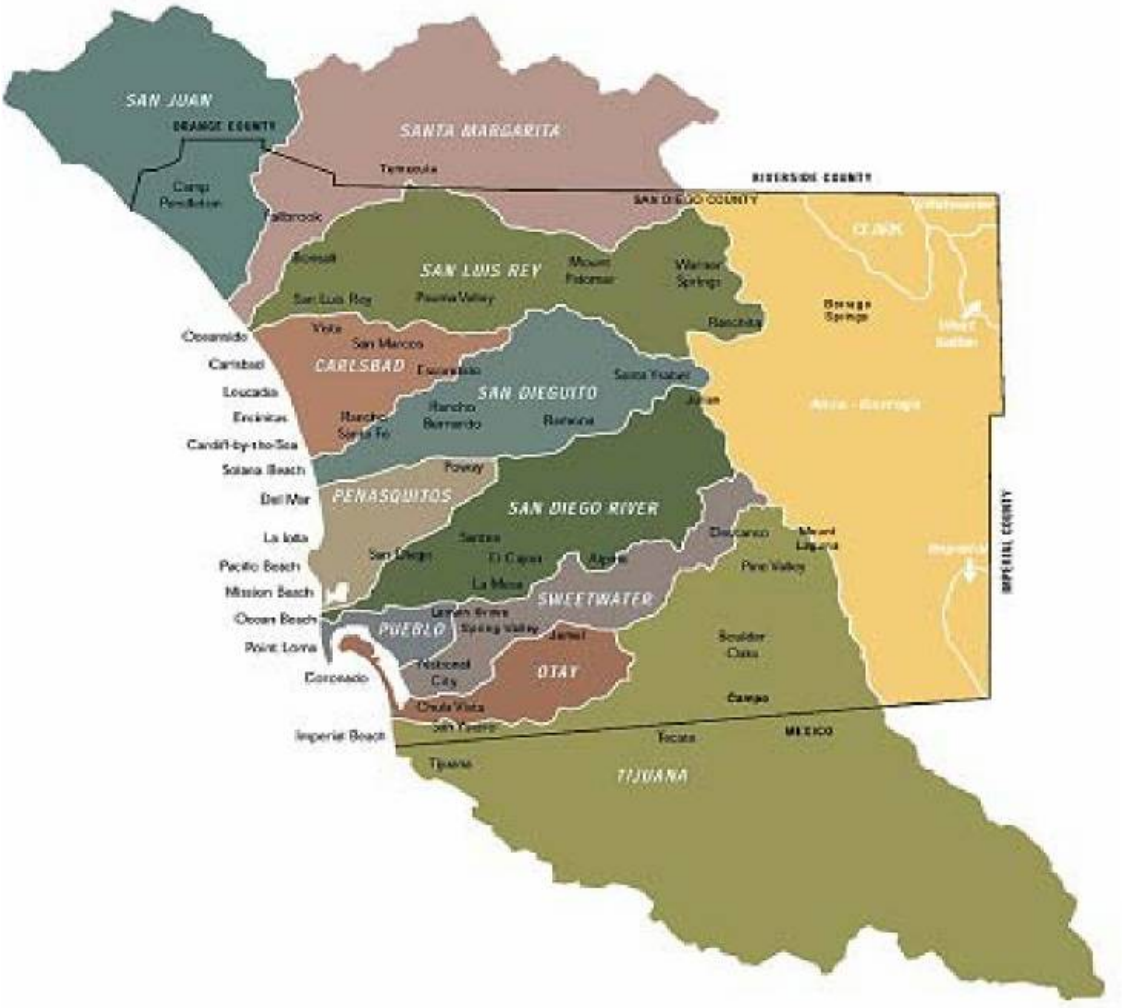
The California Water Plan Update provides a framework for water managers, legislators, and the public to consider options and make decisions regarding California's water future. The water plan, which was updated in 2009 and will be updated again in 2013, presents data and information on California's water resources including water supply evaluations and assessments of agricultural, urban, and environmental water uses. The water plan also identifies and evaluates existing and proposed statewide demand management and water supply augmentation programs and projects to address the state's water needs.

When the California Water Plan is updated, extensive data review of water conditions, water use, and water supplies occurs. Water conservation, water recycling, and desalination are important resources that are considered. Through UWMPs, water suppliers report their water use and supplies. With the submittal of the 2010 UWMPs, the creation of a comprehensive database will be available to support California Water Plan Update 2013.

2.3.2 Integrated Regional Water Management Plans

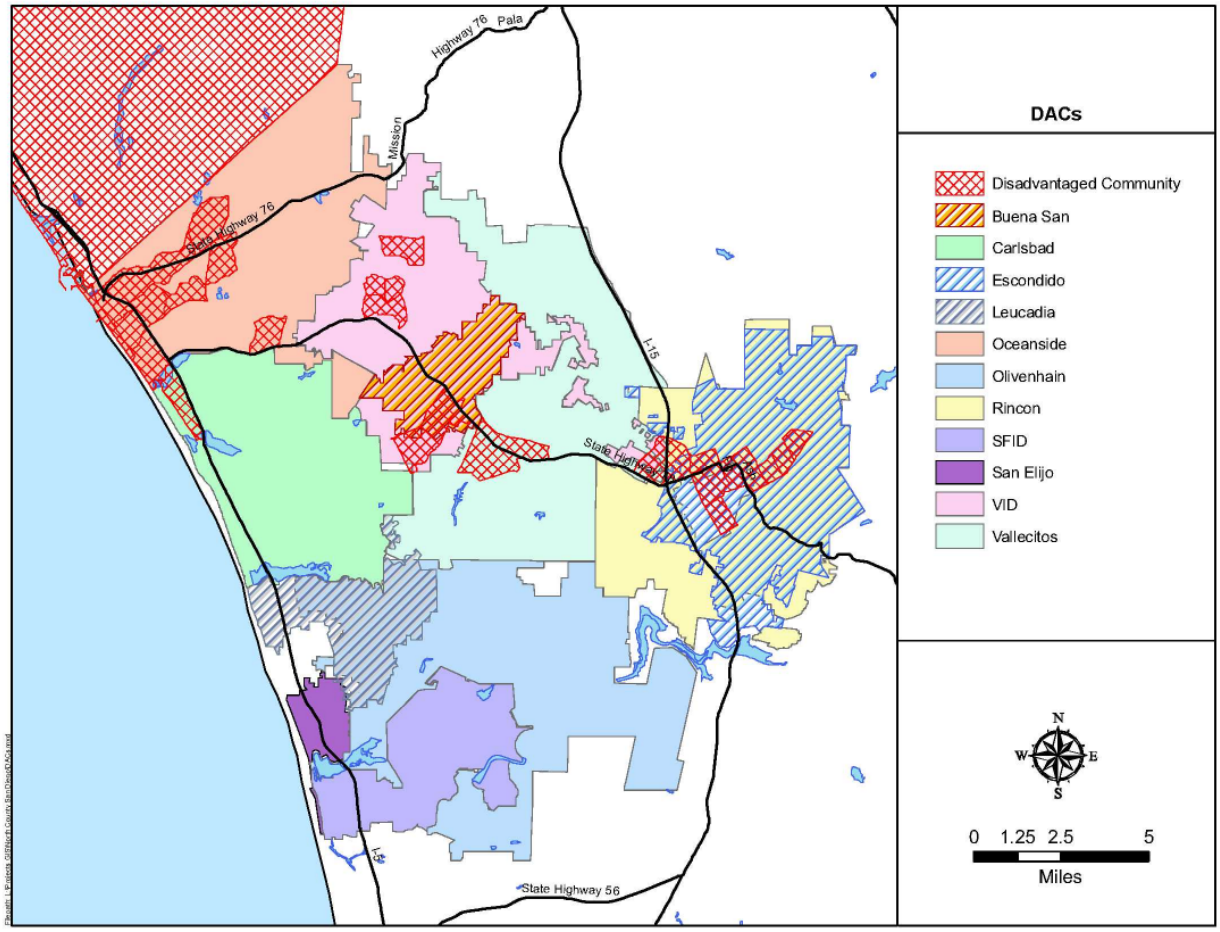
Since the legislature passed the Integrated Regional Water Management Planning Act in 2000 (CWC § 10530 et seq., added by Stats. 2002, c. 767), Integrated Regional Water Management Plans (IRWMP) have been developed throughout the state. This process involves an integrated approach to water management planning by providing the framework for local agencies to cooperatively manage available local and imported water supplies and improve water supply quality, quantity, and reliability. Many of the IRWMP elements (CWC § 10540 et seq.) are also part of an UWMP and can be addressed cooperatively during the UWMP process, if certain criteria are met. OMWD participated in the development of the San Diego IRWMP; a copy is included as **Appendix D** and a map of the planning region is included below as **Figure 1**. OMWD is also a past member of the Regional Advisory Committee which was originally formed in December 2006 to assist the Regional Water Management Group in the completion of the IRWMP and in the prioritization of projects for Proposition 50 funding.

Figure 1 – Integrated Regional Water Management Planning Region



The IRWMP relied upon census data from the California Department of Finance to determine which communities in the San Diego region may be classified as Disadvantaged Communities (DACs). The statewide median household income (MHI) for the year 2000, based on the California Department of Finance data, was $46,000. Using the definition that a disadvantaged community is a community with a MHI that is less than 80% of the statewide annual MHI, communities with a MHI of $37,520 (80% of $46,000) are considered DACs. Using Census 2000 data, 80% of the statewide annual MHI is $37,994 and, using U.S. Census Bureau data for 2003, 80% of the statewide annual MHI is $38,752. As a result, the MHI of $37,520 calculated using the California Department of Finance 2000 census data provides the most restrictive definition of disadvantaged communities. For the purposes of the IRWMP analysis, DACs were defined using 80% of the Department of Finance 2000 census data, providing a conservative assessment of DACs in the region. OMWD has no DACs in its service area. A map showing the location of DAC's throughout the San Diego region is included below as **Figure 2.** A discussion of lower income housing in OMWD's service area as required under CWC § 10631.1 is included in Section 4.4 of this UWMP.

Figure 2 – San Diego Disadvantaged Communities



The San Diego IRWMP supports OMWD's and CWA's UWMPs by promoting regional planning and supporting projects that aim to increase water supply reliability and improve surface water and groundwater quality. IRWM planning and funding will help to make possible

water supply projects in the areas of seawater desalination, recycled water, local surface water, and groundwater, which are part of the region's projected mix of water resources. The IRWM program also supports water conservation, another key element of OMWD's and CWA's UWMPs.

2.3.3 SB 610 and SB 221

SB 610 (in part, CWC §§ 10910 through 10915) and SB 221 (California Government Code §§ 65867.5, 66455.3, and 66473.7) added and amended provisions of state law to improve the link between information on water supply availability and land use decisions made by cities and counties. In general terms, SB 610 requires the applicable public water system to prepare and adopt a water supply assessment to be included in the environmental documentation prepared by a city or county for certain types of proposed projects as defined by SB 610. SB 221 generally requires the approval of a development agreement or tentative map that includes more than 500 dwelling units to be conditioned on a written verification from the applicable public water system that sufficient water supplies will be available. Section 4 of CWA's 2010 UWMP contains analyses and documentation on the existing and planned water supplies being developed by CWA. That information may be used by CWA's member agencies in preparing the water supply assessments and written verifications required under state law.

2.3.4 Model Water Efficient Landscape Ordinance (Assembly Bill 1881) and Cal Green

As set forth by the DWR Guidebook, Part II, Section F, the Water Conservation in Landscaping Act of 2006 [Assembly Bill (AB) 1881] requires cities, counties, charter cities, and charter counties, to have adopted landscape water conservation ordinances by January 1, 2010. Pursuant to this law, DWR prepared a Model Water Efficient Landscape Ordinance (Model Ordinance) for use by local agencies. The Model Ordinance was approved by the Office of Administrative Law and became effective on September 10, 2009.

DWR Guidebook, Part II, Section F also states that effective January 1, 2010, each local agency was to have either adopted the state Model Ordinance or crafted an ordinance to fit local conditions. Local agencies had the option of responding independently to the requirement or working collaboratively with one or more local agencies to develop and adopt a broader regional ordinance. If a local or regional ordinance was adopted, the only requirement was that it must be as effective as the Model Ordinance in conserving water. OMWD was a founding member of the Regional Model Landscape Ordinance Working Group when the workgroup formed to develop a Model Ordinance for San Diego County. The land-use planning agencies with which OMWD's boundaries overlap that are responsible for preparing and adopting Landscape Ordinances as described above - City of Encinitas, City of Carlsbad, City of Solana Beach, City of San Marcos, the City of San Diego and the County of San Diego - have all adopted landscape ordinances that comply with AB 1881. OMWD is not a land-use planning agency and does not have the authority to enforce a landscape ordinance; therefore, OMWD is not required by AB 1881 to adopt a landscape ordinance.

DWR Guidebook, Part II, Section F states that water efficient landscape ordinances will help agencies meet urban water management goals by limiting the water use per acre to a prescribed water budget. The Model Ordinance water budget is based on an evapotranspiration (ETo) adjustment factor of 0.7, which allows a site-wide water budget of 70 percent of local

evapotranspiration. The California Urban Water Conservation Council's (CUWCC) Best Management Practice (BMP) 5, Large Landscape Water Conservation, currently allows for a water budget based on an evapotranspiration adjustment factor of 1.0. If new and rehabilitated landscapes adhere to the provisions of the Model Ordinance, the expected urban water needs can be lower than that expected under adherence to BMP 5.

DWR Guidebook, Part II, Section F states that the plant factor used in the water budget calculation assumes a plants ratio of 1/3 high water-use plants, to 1/3 moderate water-use plants, to 1/3 low water-use plants. By voluntarily increasing the percentage of low water-use plants, even more water savings can be realized. The local agencies of a region can take further action and require the selection of plants that require little supplemental irrigation as part of a water shortage contingency plan. The Model Ordinance applies to non-residential and developer-installed residential landscaping where the landscape area is at least 2,500 square feet. The Model Ordinance also applies to homeowner-provided residential landscaping, where the landscape area is 5,000 square feet or more.

DWR Guidebook, Part II, Section F states that an additional landscape-related law that passed since the Model Ordinance is a measure that reinforces, and in some cases extends, the goal of water use efficiency in urban landscapes by addressing irrigation of smaller residential lots. The code is referred to as "Cal Green" and is an update to the California Green Building Code jointly developed by the California Building Standards Commission and the Department of Housing and Community Development. Cal Green took effect in January 2011. In single family residential landscapes of any size, it requires the use of irrigation controllers with weather-based or soil moisture sensor-based technology and rain sensor technology. Non-residential landscapes use the provisions of the Model Ordinance as a baseline with voluntary tiers to achieve higher water savings to capture landscape projects that are not reviewed by the local land use authority. In addition, submeters are required for non-residential landscaped areas between 1,000 and 5,000 square feet, which exceeds current Water Code requirements (CWC § 535) and also requires dedicated water submeters on new water service of non-residential properties with a landscape area of 5,000 square feet or more. As the Cal Green Building Code applies to all new construction, OMWD will see benefits associated with water efficiency requirements contained therein. While building in OMWD's service area has slowed as result of the recent economic situation, the San Diego Association of Governments (SANDAG) still projects growth to occur in OMWD's service area through 2035. Overall, the Cal Green Building Code should assist OMWD in lowering its overall gallons per capita per day (GPCD) calculations through the code's focus on water use efficiency.

Chapter 3

OMWD Description

This chapter presents background information relative to the UWMP including a description of OMWD's physical system and a discussion of economic and other criteria for evaluating the feasibility of conservation measures. It also includes a description of the climate, population, and demographics in OMWD's service area as well as discussions of changes to the water system, the water supplier's organizational structure, and issues that affect the water system.

OMWD is a public agency providing water, wastewater services, recycled water, hydroelectricity and operation of the Elfin Forest Recreational Reserve and has been serving water to its customers since 1961. OMWD was originally incorporated on April 9, 1959 for the purpose of developing an adequate water supply for the landowners and residents of its service area. On June 14, 1960, OMWD voted to become a member of CWA, which is a member of MWD, thus becoming eligible to purchase imported water from CWA aqueducts and distribute this water throughout its service area. OMWD is one of 24 member agencies of CWA. Member agency status entitles OMWD to directly purchase water for its needs on a wholesale basis. OMWD relies on CWA to plan for and provide a reliable water supply to the entire county.

OMWD strives to provide a high level of service and to maintain close communication with its customers, and is proud of its reputation as an accessible, productive and progressive public agency. OMWD is governed by a five-member Board of Directors, whose members are publicly elected by division. The public is notified of all Board meetings pursuant to the Ralph M. Brown Act, and these meetings are open for public comment and participation.

OMWD Mission Statement

Water - Providing safe, reliable, high-quality drinking water while exceeding all regulatory requirements in a cost-effective and environmentally responsive manner.

Recycled Water - Providing recycled water and wastewater treatment in the most cost-effective and environmentally responsive method.

Parks - Safely operating the Elfin Forest Recreational Reserve and providing all users with a unique recreational, educational, and environmental experience.

Emergency Management - Complying with policies and procedures that adhere to local, state, and federal guidelines for national security and disaster preparedness.

Sustainable Operations - Pursuing alternative and/or renewable resources with the most sustainable, efficient, and cost-effective approach.

3.1 Service Area

OMWD includes portions of the cities of Encinitas, Carlsbad, San Diego, Solana Beach, and San Marcos, including the communities of Olivenhain, Leucadia, Elfin Forest, Rancho Santa Fe, Fairbanks

Ranch, Santa Fe Valley and 4S Ranch. A map of the OMWD service area is included below as **Figure 3**.

Figure 3- OMWD Service Area

All customers in OMWD's service area are metered. The growth in number of installed meters has paralleled OMWD's growth in water use, with the number of installed meters increasing from 1,250 in 1972 to 23,797 at present. The number of service connections for customer meters vary in size from 5/8-inch to 8-inch. Approximately 70 percent of customer meters are 3/4-inch and smaller, and these are mostly residential customers which account for approximately 76 percent of OMWD's total water use. The remaining 24 percent of water is used by the 30 percent of customers with 1-inch and larger meters.

As recently as Fiscal Year (FY) 1969-70, agriculture accounted for over 70 percent of OMWD's total water use, but this percentage has decreased over the years. As total agricultural use has declined, domestic use has grown. Agriculture today represents only 5 percent of the total water demand in OMWD, using 1,938 acre feet (AF) of water in FY 2004-2005 and 684 AF in FY 2009-2010. For the fiscal year ended June 30, 2010, approximately 75 percent of water delivered was for domestic users, 15 percent for irrigation purposes, 5 percent for agricultural users, and 6% for commercial purposes. (Numbers used are rounded up to the nearest whole number.)

Domestic water consumption covers both indoor and outdoor uses. Indoor water uses include sanitation, bathing, laundry, cooking, and drinking. Most outdoor water use entails landscape irrigation. Other minor outdoor uses at single-family homes include car washing, surface cleaning, and similar activities.

Commercial water demands generally consist of uses that are necessary for the operation of a business or institution, such as drinking, sanitation, and landscape irrigation. Major commercial water users include service industries, such as restaurants, car washes, laundries, hotels, and golf courses.

Economic statistics developed by the San Diego Regional Chamber of Commerce indicate that almost half of San Diego's residents are employed in commercial (trade and service) industries.

OMWD utilizes its CMP as a long-term capital planning tool to address existing and future facility needs within OMWD's three enterprise areas: potable water, wastewater, and recycled water. The CMP is updated every 5 years. Based upon the 2010 CMP, it is estimated that OMWD is currently at 85% of its ultimate build-out of approximately 33,442 equivalent dwelling units.

3.2 Service Area Population

OMWD currently covers an area of approximately 30,542 acres (over 48 square miles), and currently serves a population of over 65,000 persons. OMWD has no unmetered service connections. As shown below in **Table 2**, SANDAG projects that OMWD's population will increase to 66,993 in 2015, 67,987 in 2020, 69,003 in 2025, 71,101 in 2030, and 72,095 by 2035. This data is based on SANDAG's Series 12 Forecast adopted by the SANDAG board on February 26, 2010, and is the most current forecast data available at the time of preparation of this UWMP.

Table 2
Population — current and projected

	2010	2015	2020	2025	2030	2035	Data source
Service area population	66,872	66,993	67,987	69,003	71,101	72,095	SANDAG

The current water use over all customer classifications is approximately 267 GPCD. Although this is the lowest GPCD for OMWD since 1995, it is higher than most other water districts in San Diego County, due primarily to landscape irrigation demands and an abundance of large single-family residences with large landscaped lots. Discussion and data regarding GPCD determination including population, and supporting information as required by the DWR guidelines are provided in Section 4.5 of this UWMP.

3.3 Economics

In late 2007, the national economy plunged into another recession driven by the collapse of large financial institutions, and a downturn in the housing market. This recession had severe and sustained impacts on the local economy, which included reduced home prices, elevated foreclosure rates, and higher job losses. Although June 2009 marked the official end of the recession, its lingering effects are still evident in the diminished number of new housing permits issued in 2010 and in the double-digit unemployment rate.

Based on analyses by SANDAG, OMWD will continue to grow through 2035, although at a much slower pace than between 2000 and 2010. The estimate of total dwelling units at ultimate development has been lowered because of changes in development plans in the 4S Ranch area, and two large parcels that were planned for residential development that will now be set aside as undeveloped lands for environmental mitigation. According to the 2010 Olivenhain Municipal Water District Comprehensive Annual Financial Report, included as **Appendix E**, the California Department of Finance estimates the per capita personal income within OMWD's service area to be $45,746 and the unemployment rate to be

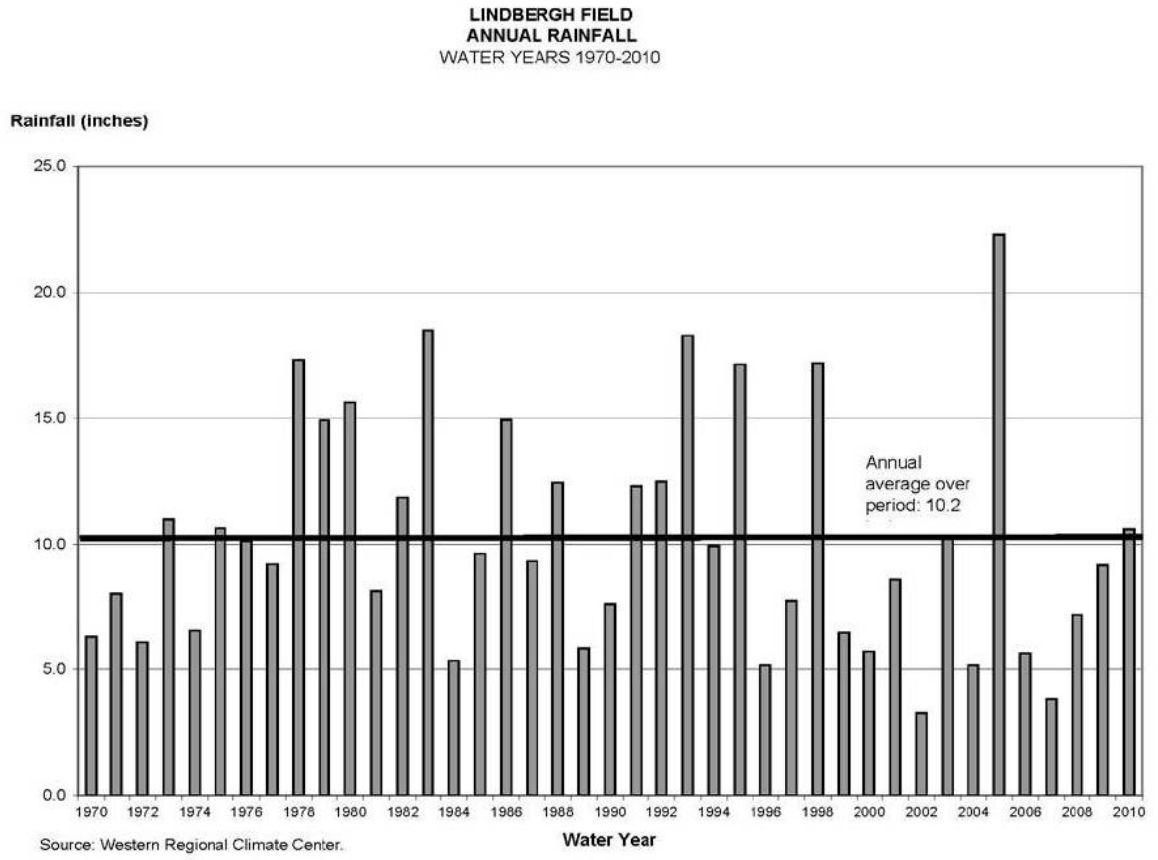
10.5%. A discussion of lower income housing in OMWD's service area as required under CWC § 10631.1 is included in Section 4.4 of this UWMP.

3.4 Climate

Many of the areas served by OMWD feature a mild coastal climate, varied topography, and convenient proximity to major urban areas. Therefore, OMWD has experienced fairly rapid urbanization, although rural, undeveloped area still remains. Inland areas are both hotter in summer and cooler in winter.

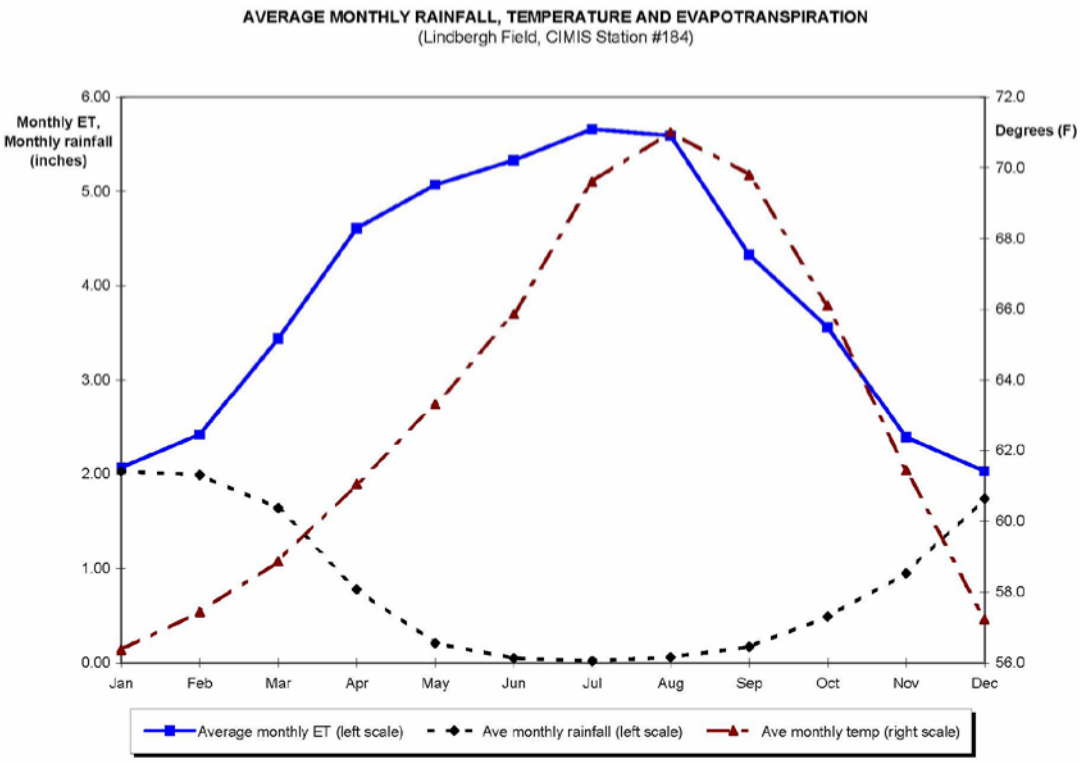
Average annual rainfall is approximately 10.20 inches per year on the coast and in excess of 14 inches per year inland. As shown in **Table 3**, local rainfall exceeded the historic annual average only twice since 1999. In 2005, rainfall in inches was 22.69 and it was 16.26 in 2010. More than 80 percent of the region's rainfall occurs between December and March.

Table- 3 ANNUAL RAINFALL (LINDBERGH FIELD STATION)



Variations in weather affect short-term water requirements, causing demand spikes during hot, dry periods and reductions in use during wet weather. These predominantly dry conditions resulted in record level demands during fiscal year 2004, only to decrease heavily with record rainfall in fiscal year 2005. On a monthly basis, water requirements tend to increase during the summer months when a decrease in rainfall combines with an increase in temperatures and an increase in evapotranspiration levels as shown in **Table 4** on the next page.

Table 4 - Average Monthly Variables



3.5 Climate Change

OMWD is coordinating through the leadership efforts of CWA to assess potential water supply impacts due to climate change. CWA's UWMP details its efforts with regard to studies and research on climate change as well as greenhouse gas mitigation measures. The scenario planning process outlined in Section 10 of its UWMP deals with adapting to potential supply and demand impacts due to climate change. Climate change has become an increasingly important issue to water utilities and both state and federal legislators. Changes in weather patterns which deviate from historical cycles could significantly affect water supply planning. Irrespective of the debate associated with the sources and cause of increasing concentrations of greenhouse gasses (GHGs), research identifies potential future risks to water resources.

Sections 1.7.3 and 1.7.3.1 of CWA's UWMP address its response to climate change concerns. The following text regarding climate change is taken directly from the CWA UWMP. (CWA refers to itself as the "Water Authority.")

> *The Water Authority recognizes the importance of adapting to climate change and being a leader in sustainability and stewardship. Since 2008, the Water Authority's business plan has included its Climate Change & Sustainability Program within the core business area. The key issues identified within this program include advocating for improvement in modeling to provide precipitation data on a local and regional scale, encouraging focused scientific research on climate change to identify the impacts on the region's water supply, and partnering with other water utilities to incorporate the impacts of climate change on water supply planning and the*

development of decision support tools. The Water Authority recognizes the challenges that climate change poses to our region and is committed to proactively addressing the issue.
1.7.3.1 San Diego County Water Authority's Activities Related to Climate Change Concerns
Knowledge Sharing and Research Support

The Water Authority is an active and founding member of the Water Utility Climate Alliance (WUCA). WUCA consists of ten of the nation's largest water providers collaborating on climate change adaptation and GHG mitigation issues. As part of this effort, WUCA pursues a variety of activities on multiple fronts. WUCA monitors development of climate change-related research, technology, programs, and federal legislation. Activities to date include such things as:

- *Letter of support for Western Water Assessment's continued funding as a Regional Integrated Sciences and Assessments team under the National Oceanic and Atmospheric Administration (NOAA)*
- *Letter of support for the 2009 Kerry-Boxer Water Utilities Mitigation and Adaptation Partnerships congressional bill addendum*
- *Regular communication and consultations with federal agencies on the U.S. Environmental Protection Agency's Climate Ready Water Utility Working Group*
- *NOAA Climate Service and January 2010 International Climate Change Forum*

In addition to supporting federal and regional efforts, WUCA released a white paper entitled "Options for Improving Climate Modeling to Assist Water Utility Planning for Climate Change" in January 2010. The purpose of the paper was to assess Global Circulation Models, identify key aspects for water utility planning, and make seven initial recommendations for how climate modeling and downscaling techniques can be improved so that these tools and techniques can be more useful for the water sector.

To address water provider–specific needs, WUCA focused on how best to incorporate knowledge from the above white paper into water planning., which was more thoroughly explored in a second white paper also released January 2010 entitled "Decision Support Planning Methods: Incorporating Climate Change Uncertainties into Water Planning." This paper assessed five known decision support tools for applicability in incorporating climate change uncertainty in water utility planning and identified additional research needs in the area of decision support methodologies. The Water Authority utilized and modified one of these decision support tools, "Scenario Planning" in its long-range planning for the 2010 Plan, which was the basis of Section 10, "Scenario Planning: Managing an Uncertain Future," below.

The Water Authority and the other member agencies of WUCA annually share individual agency actions to mitigate GHG emissions to facilitate further implementation of these programs. At a September 2009 summit at the Aspen Global Change Institute, WUCA members met with global climate modelers, along with federal agencies, academic scientists, and climate researchers to establish collaborative directions to progress climate science and modeling efforts. The Water Authority, through its membership with WUCA, continues to pursue these opportunities and partnerships with other water providers, climate scientists, federal agencies, research centers, academia, and key stakeholders.

Planned Research

The Water Authority in cooperation with the Scripps Institution of Oceanography and San Diego State University, and with partial funding from the Blasker Environmental Fund at the

San Diego Foundation began a project in 2010 to better understand the uncertainties of climate change and the influence climate change may have on water supply and demand for the San Diego Region. This project will (a) provide a better understanding of the range of uncertainties of climate change and the influence that climate change will have on water supply and demand for the region, (b) improve the quantification of the likely availability of water supplies from the Sierra Nevada, (c) narrow the range of uncertainty of the impacts on the Colorado River basin and the reduction of flows under a range of climate change scenarios in the region, and (d) result in the development of municipal and rural demand models to include climatic influences – including higher temperatures, greater evaporative losses, storm-time conditions and hydrologic response – along with the evaluation of social and economic impacts of changing demand and supply in the region.

Implementation of Programs and Policies

The Water Authority has made great efforts to implement GHG mitigation programs and policies for its facilities and operations. To date, these programs and policies have focused on the following:

- *Exploring water supply/energy relationships and opportunities to increase efficiencies to lower GHG emissions*
- *Joining the Climate Registry; the Water Authority is currently developing its baseline GHG inventory from calendar year 2009*
- *Reducing the number of vehicles in the fleet and replacing vehicles with hybrids when possible*
- *Developing solar power at three Water Authority sites, including the Twin Oaks Valley Water Treatment Plant, the Escondido Operations Center, and the San Diego Headquarters*

The entire CWA UWMP is included as **Appendix F**, and **Appendix G** includes the 2010 Regional UWMP of regional wholesaler, MWD.

3.6 Potable Water System

All of the water supply delivered by OMWD for potable use is purchased from CWA as either treated or raw water. CWA water can be delivered to OMWD through five service connections, all from CWA's Second San Diego Aqueduct. Four are treated water connections and one is a raw water connection. The majority of water purchased from CWA is treated by OMWD and then served to its customers. OMWD provides potable water service to customers through a distribution system that currently includes approximately 425 miles of potable water pipelines, 18 closed storage reservoirs, one covered in-ground reservoir, four pump stations, and a 450 kW hydroelectric generation station.

3.7 Water Treatment

Located at the base of the Olivenhain Dam and Reservoir, the David C. McCollom Water Treatment Plant (DCMWTP) was the largest of its kind in the world upon its completion and incorporates the latest membrane ultrafiltration technology, providing more certain removal of waterborne health threats in a cost-effective, environmentally safe manner. The 34 million gallons per day (MGD) membrane treatment plant came on line April 2002, initially capable of treating 25 MGD. It was expanded by 9 MGD in 2004-05 to its present capacity.

In 2012, OMWD will be required to meet a more stringent set of water quality regulations that have been promulgated by the United States Environmental Protection Agency as part of the Long Term 2 Enhanced Surface Water Treatment Rule (LT2 ESWTR). In order to meet the LT2 ESWTR regulations, various changes need to be made to the treatment plant with respect to how the water treatment membranes are operated and maintained. These improvements include addressing issues with equalizing flow changes at both the front end and back end of the treatment train and improving OMWD's ability to handle solids which are removed from the water during the treatment process. The Environmental Impact Report for the DCMWTP was certified by OMWD's Board of Directors in March 1994; a Notice of Exemption was filed with the County of San Diego in February 2011 for construction of LT2 ESWTR-related improvements at the plant. Bonds were recently sold by OMWD to fund the improvements. Plans to begin construction in 2010 were delayed due to design issues. Design is complete and construction is scheduled to be completed by the middle of 2012. Other than a 60-day shut down in early 2012, the plant will remain fully operational. OMWD will purchase treated water from CWA during this time.

The mechanisms supporting the DCMWTP result in significant savings to OMWD in terms of operating costs and increased reliability. The available hydraulic gradient from the 72 inch raw water pipeline is converted to energy via the use of turbines. This energy helps run the plant and can save OMWD $1 million per year in power costs. Ancillary facilities including an electrical sub-station, pump station, and flow control facility, better prepare OMWD for a catastrophic event such as a regional power outage.

3.8 Unit AA Pipeline Project

CWA is in the final stages of constructing a pipeline, pump station, and hydrogeneration station from the City of San Diego-owned Lake Hodges to Olivenhain Reservoir in order to capture local runoff during the winter season and generate electricity during peak periods in the summer. In order to resolve the issue of introducing lesser quality water from Lake Hodges to Olivenhain Reservoir, OMWD is constructing a 17,000 foot, 48 inch diameter raw water pipeline from CWA's Second San Diego Aqueduct to the DCMWTP. DCMWTP will utilize this pipeline instead of pulling water from the Olivenhain Reservoir thereby avoiding water quality issues resulting from the introduction of lower quality runoff water or water from Lake Hodges to the Olivenhain Reservoir.

An Environmental Impact Report (EIR) has been certified and plans are being finalized for the new pipeline. Construction of the project is anticipated to begin in mid-2011 with completion by early to mid-2012. A copy of the EIR for the Unit AA Pipeline is attached as **Appendix H**.

Chapter 4

Water Demand

This chapter includes sections on historical and current water use, projected water use, and historical and projected water supply. It describes the urban water system demands, including calculating its baseline and interim and urban water use targets. It quantifies the current water system demand by category and projects them over the planning horizon of the UWMP.

4.1 Historic and Current Demand

Total annual water use within OMWD has grown from approximately 1,900 AF in FY 1969-70, to 5,300 AF in FY 1979-80, to 12,556 AF in FY 1994-95, to 18,170 AF in FY 1999-2000, and 20,684 AF in FY 2004-2005. Economic and water supply shortage conditions caused annual water use to fall to approximately 18,660 AF in FY 2009-2010. This drop is attributable to a combination of factors, including mandatory water use restrictions, a growing conservation ethic, greater consumer response to the retail cost of water, the national and local recessions, and a high rate of home foreclosures. **Table 5** below contains FY 2005 actual water deliveries in AF. All accounts are metered in OMWD's service area.

Table 5
Water deliveries — actual, 2005

	2005				
	Metered		Not metered		Total
Water use sectors	# of	Volume	# of	Volume	Volume
Single family	18,066	13,131	0	0	13,131
Multi-family	283	564	0	0	564
Commercial	434	1,184	0	0	1,184
Industrial	0	0	0	0	0
Institutional/governmental	65	197	0	0	197
Landscape	661	3,597	0	0	3,597
Agriculture	365	1,982	0	0	1,982
Raw	0	305	0	0	305
Other - recycled water	60	475			475
Total	19,934	21,435	0	0	21,435

Institutional/governmental stated here is water used by OMWD. OMWD does not have an industrial customer code.

Table 6 on the next page contains actual OMWD water deliveries in AF for FY 2010.

Table 6 Water deliveries — actual, 2010					
	2010				
	Metered		Not metered		Total
Water use sectors	# of	Volume	# of	Volume	Volume
Single family	19,990	13,391	0	0	13,391
Multi-family	470	689	0	0	689
Commercial	443	899	0	0	899
Industrial	0	0	0	0	0
Institutional/governmental	90	241	0	0	241
Landscape	577	2,518	0	0	2,518
Agriculture	155	922	0	0	922
Other-recycled water	250	2,498			2,498
Total	21,975	21,158	0	0	21,158
Institutional/governmental stated here is water used by OMWD. OMWD does not have an industrial customer code.					

4.2 Projected Demand

Table 7 contains projected OMWD water deliveries in AF for FY 2015 based on CWA's M.A.I.N. Model, explained in Section 6.1 of OMWD's UWMP.

Table 7 Water deliveries — projected, 2015					
	2015				
	Metered		Not metered		Total
Water use sectors	# of	Volume	# of	Volume	Volume
Single family	20,990	15,268	0	0	15,268
Multi-family	455	730	0	0	730
Commercial	410	1,216	0	0	1,216
Industrial	0	0	0	0	0
Institutional/governmental	100	243	0	0	243
Landscape	600	3,161	0	0	3,161
Agriculture	100	500	0	0	500
Other - recycled water	275	3,200	0	0	3,200
Total	22,930	24,318	0	0	24,318
Institutional/governmental stated here is water used by OMWD. OMWD does not have an industrial customer code.					

Table 8 on the next page contains projected OMWD water deliveries in AF for FY 2020 based on CWA's M.A.I.N. Model, explained in Section 6.1 of OMWD's UWMP.

Table 8 Water deliveries — projected, 2020					
	2020				
	Metered		Not metered		Total
Water use sectors	# of	Volume	# of	Volume	Volume
Single family	21,390	15,981	0	0	15,981
Multi-family	460	786	0	0	786
Commercial	410	1,311	0	0	1,311
Industrial	0	0	0	0	0
Institutional/governmental	100	262	0	0	262
Landscape	600	3,408	0	0	3,408
Agriculture	75	400	0	0	400
Other - recycled water	300	4,100	0	0	4,100
Total	23,335	26,248	0	0	26,248
Institutional/governmental stated here is water used by OMWD. OMWD does not have an industrial customer code.					

Table 9 contains projected OMWD water deliveries in FY 2025, FY 2030 and FY 2035 based on CWA's M.A.I.N. Model, explained in Section 6.1 of OMWD's UWMP.

Table 9 Water deliveries — projected 2025, 2030, and 2035						
	2025		2030		2035	
	metered		metered		metered	
Water use sectors	# of	Volume	# of	Volume	# of	Volume
Single family	21,790	17,169	22,350	18,738	21,790	19,679
Multi-family	475	840	500	900	500	936
Commercial	410	1,399	425	1,499	425	1,560
Industrial	0	0	0	0	0	0
Institutional/governmental	100	278	100	300	100	312
Landscape	520	3,636	550	3,898	570	4,055
Agriculture	50	350	50	350	50	350
Other - recycled water	325	4,300	350	4,300	375	4,300
Total	23,670	27,972	24,325	29,985	23,810	31,192
Institutional/governmental stated here is water used by OMWD. OMWD does not have an industrial customer code.						

4.3 Water Loss

OMWD had an estimated unaccounted water loss of approximately 5.2% for FY 2010, which is significantly lower than the American Water Works Association (AWWA) standard of 12%. OMWD projects water loss to remain lower than the AWWA standard in future years as OMWD will continue to proactively prevent water loss in the areas of meter reading, systems operations, maintenance, and finance. It now utilizes AWWA water loss software as a tool to identify areas of improvement in preventing water loss.

Meters are considered the “cash registers” of OMWD operations and the meter team routinely tests water meters to ensure that meters are accurate within 1.5%. Currently, OMWD has a meter-testing program that prioritizes meter testing on high-capacity water users as meters are mechanical devices that on occasion will malfunction. Twenty years ago, OMWD had many different brands of water meters including Hersey, Precision, Rockwell, and Badger meter products. It replaced all of these meters with Sensus meters. Sensus meters work in conjunction with their industry-leading Automated Meter Reading (AMR) system.

OMWD’s systems maintenance team determined that the majority of service leaks within OMWD’s service area are on Orangeburg services. The program by which these leaks are addressed consists of the identification of areas where Orangeburg services were installed and replacing each service by pulling copper service through the Orangeburg line. To date, OMWD is averaging approximately 150 replacements per year and has replaced well over one thousand services.

The soil in OMWD’s service area is considered "hot," or highly corrosive by corrosion industry standards. OMWD hired corrosion engineers to design a corrosion prevention system called “cathodic protection” years ago. The once monthly or weekly leaks disappeared and although OMWD is not completely leak free, the cathodic systems are protecting steel water mains and copper service lines. The cathodic protection program includes 28 rectifier impressed current zones that are operational around the clock. OMWD has thousands of sacrificial systems that protect isolated pipelines as well as individual meter services. The cathodic protection system has worked so well, OMWD has incorporated this system into its specification guidelines.

Water loss prevention is one of the primary goals for the systems operations team. Operators are in charge of ordering wholesale water from CWA. The job is to fill reservoirs without overflowing them. If reservoirs overflow, the amount of water loss would add up to significant water and revenue losses. The systems operation team is also responsible for maintaining distribution pressures for firefighting and domestic water use purposes.

OMWD has proactively updated its distribution system with state-of-the-art telemetry systems that are programmed to alert operators automatically of such incidents as rising reservoir levels. There are safeguards for every pressure zone. The OMWD service area is unique in that the majority of its water pressure is fed through hydraulic gradients, or gravity fed. OMWD has over 70 pressure reducing systems that feed into various pressure zones. Pressure reducing stations cut high pressure down to acceptable levels for consumers. Each pressure reducing station has safeguards for over pressurization of the zones. OMWD has telemetry for each zone to alert operators when a pressure relief valve opens to relieve pressure, allowing the operator to respond and prevent water loss.

Other miscellaneous water loss prevention measures include metering of OMWD's flushing program, firefighting water use metering, water loss trending of hit fire hydrants, interconnect meter preventative maintenance, and construction metering including construction jumpers.

The finance department maintains journals produced from meter reading data that show exceptions from average usage on each account. The parameter used is 200% over or under average usage. Under usage can indicate a slowing or stopped meter. Over usage can indicate a leak. Meter readers check these exceptions against the account's usage history and determine whether the usage recorded for the month is reasonable in the light of its monthly usage history. If considered unusual, meter readers will visit the property to check the read, look for the appearance of a leak, and make contact with the customer. Stopped meters are replaced within several days of their discovery.

Meter readers meet with customers who question high usage or a change in their usage pattern. Customers are then notified of apparent leaks, which can be fixed to prevent further high usage and higher bills. Meter readers also contact customers in the event that neighbors have reported water flowing from these properties. When customers cannot be reached, meters will be shut off at the curb stop and cards hung to notify customers as to why their water was turned off.

Table 10 shows current and projected additional uses and losses.

Table 10
Additional water uses and losses in AF

Water use	2005	2010	2015	2020	2025	2030	2035
Saline barriers	0	0	0	0	0	0	0
Groundwater recharge	0	0	0	0	0	0	0
Conjunctive use	0	0	0	0	0	0	0
Raw water	305	0	0	0	0	0	0
Recycled water	475	2,498	3,200	4,100	4,300	4,300	4,300
System losses (Based on 10-yr average of 4.5%)	387	1,040	1,094	1,180	1,259	1,349	1,404
Other (storage)	0	0	0	0	0	0	0
Other (define)	0	0	0	0	0	0	0
Total	1,167	3,538	4,294	5,280	5,559	5,649	5,704

These numbers are included in OMWD's total projected demand.

4.4 Lower Income Housing

The Act provides that the water use projections required by CWC § 10631 shall include projected water use for single-family and multifamily residential housing needed for lower income households, as defined in California Health and Safety Code § 50079.5 and as identified in the housing element of any city and county in the service area of the supplier. The Act further provides that it is the intent of the legislature that the identification of projected water use for single-family and multifamily residential housing for lower income households will assist a water supplier in complying with the requirement under § 65589.7 of the California Government Code to grant a priority for the provision of service to housing units affordable to lower income households (CWC § 10631.1(b)).

OMWD has an existing policy adopted under SB 1087 (Government Code § 65589.7 and CWC § 10631.1) for the granting of priority for water services to proposed developments that include housing units for lower income households. Under SB 1087, water and sewer service providers were required to adopt a policy and procedures by July 1, 2006 and then at least once every five years. A copy of OMWD's Resolution Number 2011-10 adopting this policy is included as **Appendix I**.

As shown in **Table 11**, there are no projected single-family and multifamily lower income housing units identified in the housing elements of the general plans applicable to OMWD's service area. A lower income household is defined as 80 percent of median income, adjusted for family size. Review of the housing elements contained in the general plans of the City of Carlsbad (2008 update), City of Encinitas, City of San Diego (FY 2005-2010), City of San Marcos, City of Solana Beach, and County of San Diego (March 2010 draft) indicate that no households within OMWD's service area have been designated as lower income households. Interested parties are invited to contact each of these municipalities directly for more information on each general plan and/or the housing elements therein.

Table 11
Low-income projected water demands in AF

Low Income Water Demands	2015	2020	2025	2030	2035
Single-family residential	0	0	0	0	0
Multi-family residential	0	0	0	0	0
Total	0	0	0	0	0

4.5 Sales to Other Agencies

Since the DCMWTP began operating in 2002, OMWD has treated raw water received from CWA and sold excess treated water from the DCMWTP back to CWA to reduce the DCMWTP's fixed costs through economy of scale. In 2008, CWA began operations at its Twin Oaks Valley Water Treatment Plant which will reduce the amount of treated water purchased from OMWD under normal circumstances. OMWD is a water retail agency and not a water wholesaler. The sale of excess treated water from DCMWTP to other agencies will only be completed when OMWD customer demand is met. A goal of OMWD is to sell excess treated water to agencies in the future. Projections in AF in **Table 12** show that OMWD anticipates water sales to other agencies under normal operating circumstances.

Table 12
Retail agency demand projections provided to wholesale suppliers in AF

Water distributed	2005	2010	2015	2020	2025	2030	2035
Anticipated sales to other agencies	0	37	37	37	37	37	37
Total	0	37	37	37	37	37	37

Table 13 combines data from previous tables on use and projected use, including sales to other water agencies and low-income projection water demands, and shows total water use and projected use in AF.

Table 13 Total water use in AF							
Water Use	2005	2010	2015	2020	2025	2030	2035
Total water deliveries	21,435	21,158	24,318	26,212	27,972	29,986	31,192
Sales to other water agencies	0	37	37	37	37	37	37
Additional water uses and losses (Included in deliveries)	(3,538)	(3,538)	(4,294)	(5,280)	(5,559)	(5,649)	(5,704)
Total	21,435	21,195	24,355	26,249	28,009	30,023	31,229

OMWD has worked with CWA in determining the projected water demand under normal weather conditions, absent of the reductions being planned for compliance with The Water Conservation Bill of 2009. These projections are listed in **Table 14**.

Table 14 Retail agency demand projections provided to wholesale suppliers in AF							
Wholesaler	Contracted Volume	2010	2015	2020	2025	2030	2035
San Diego County Water Authority	N/A	18,660	19,998	20,992	22,552	24,566	25,772

Table 15 lists projected OMWD supplies. Recycled and desalinated supply projects are discussed in Chapter 5.

Table 15 Water supplies — current and projected in AF							
Water Supply Sources		2010	2015	2020	2025	2030	2035
Water purchased from:	Wholesaler supplied volume (yes/no)						
San Diego County Water Authority	Yes	18,660	19,998	20,992	22,552	24,566	25,772
Supplier-produced groundwater		N/A	0	0	0	0	0
Supplier-produced surface water		N/A	0	0	0	0	0
Transfers in		0	0	0	0	0	0
Exchanges In		0	0	0	0	0	0
Recycled Water		2,498	3,200	4,100	4,300	4,300	4,300
Desalinated Water		N/A	1,120	1,120	1,120	1,120	1,120
Other							
Total		21,158	24,318	26,212	27,972	29,986	31,192

CWA is OMWD's only wholesale supplier. **Table 16** on the next page shows OMWD's planned sources of imported water.

Table 16
Wholesale supplies — existing and planned sources of water in AF

Wholesale sources	Contracted Volume	2015	2020	2025	2030	2035
San Diego County Water Authority	N/A	19,998	20,992	22,552	24,566	25,772

With the development of local supplies as provided herein, no shortages are anticipated within OMWD's service area in a normal or single dry year through 2035.

4.6 Baselines and Targets

Base Daily Per Capita Water Use

Pursuant to the Water Conservation Bill of 2009, retail urban water suppliers are required to calculate what is known as a "base daily per capita water use" that will be the basis of their year 2020 target water use. (For discussion purposes, the term "baseline" is used interchangeably herein with the term "base daily per capita water use" as defined by the Water Conservation Bill of 2009.) Baseline water use is expressed in gallons per capita (per person) per day (GPCD) and defines how much water customers are currently using so that a 20 percent reduction or "target" can be calculated. As set forth below, the baseline is calculated as either a 10- or 15-year average of the supplier's gross water use. Water suppliers must also calculate a 5-year baseline water use and compare it against the 10- or 15-year baseline to determine the minimum required water use reduction by year 2020. The 15-year baseline can be used if the supplier met at least 10 percent of its year 2008 measured retail water demand through recycled water. OMWD did not sell 10% of its measured retail water demand through recycled water.

As indicated herein, the procedures for calculating an agency's baseline and water use targets are contained in the Water Conservation Bill of 2009 and further explained by the DWR Guidebook and the DWR Methodologies, incorporated herein as **Appendix A**. The first step in calculating the baseline is to calculate historical per capita water use by dividing the annual gross water use by the service area population that year.

CWC § 10608.12(g) defines "Gross Water Use" as the total volume of water, whether treated or untreated, entering the distribution system of an urban retail water supplier, excluding all of the following:

(1) Recycled water that is delivered within the service area of an urban retail water supplier or its urban wholesale water supplier
(2) The net volume of water that the urban retail water supplier places into long term storage
(3) The volume of water the urban retail water supplier conveys for use by another urban water supplier

(4) The volume of water delivered for agricultural use, except as otherwise provided in subdivision (f) of § 10608.24

The baseline is the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous 10-year period ending no earlier than December 31, 2004, and no later than December 31, 2010. For the purposes of § 10608.22, the urban retail water supplier's estimate of its average gross water use, reported in gallons per capita per day and calculated over a continuous five-year period ending no earlier than December 31, 2007, and no later than December 31, 2010.

According to DWR, either calendar or fiscal year data can be used. OMWD operates on a fiscal year basis and because its records and reports use a fiscal year, using fiscal years to develop the UWMP seemed the most efficient use of resources.

For purposes of calculating base daily per capita water use in accordance with CWC §§ 10608.12(b), 10608.20 and 10608.22, OMWD is using a continuous 10-year base period using the fiscal years including 1999 through 2008 and a continuous 5-year base period using fiscal years including 2004 through 2008, as further set forth herein.

Urban Water Use Targets

According to the Water Conservation Bill of 2009, water suppliers must set a year 2020 "urban water use target" and a year 2015 "interim water use target" using one of four methods:

1. 80 Percent of Baseline Water Use
2. Sum of Performance Standards Applied to Water Use Categories
3. 95 Percent of the State Hydrologic Region Target (142 GPCD for the South Coast Region)
4. Savings by Water Use Type (See, DWR Provisional Method 4 for Determining Water Use Targets, February 16, 2011.)

Each of these methods is described below.

Method 1 – 80 Percent of Baseline Water Use

This method sets a target at 80 percent of the 10-year baseline. This value must be less than 95 percent of the 5-year baseline.

Method 2 – Performance Standards Applied to Water Use Categories

Method 2 calculates a target by summing performance standards applied to indoor residential, landscaped, and commercial, industrial, and institutional (CII) water use. The indoor residential target is set at 55 GPCD. The CII target is a 10 percent reduction in use. The landscaped water use target is set using standards of the Model Ordinance as set forth in Chapter 2.7 of Division 2 of Title 23 of the State of California Code of Regulations. This requires estimating the landscaped area for each parcel in the service area. This can be accomplished with field measurements, landscape plans, remote sensing, aerial or satellite imaging, or, for parcels less than one-half acre in size, a sampling of a group of similar parcels can be applied to the group.

Method 3 - 95 Percent of the State Hydrologic Region Target

These regional targets are contained in DWR's "20x2020 Water Conservation Plan" dated February 2010. DWR divides the state into ten hydrologic regions and San Diego County falls within

Region 4, "South Coast." DWR calculated a 2005 baseline for the region of 180 GPCD; with a 20 percent reduction, the target would be 144 GPCD. DWR's statewide target was calculated at 154 GPCD. Considering the region's variance from the statewide target, and extra savings accumulated from high-performing regions (Regions 1-3), DWR assigned Region 4 a target of 149 GPCD, a 5 GPCD reduction from the state target of 154 GPCD. Based on Method 3, the Region 4 target is then ninety-five percent of the 149, or 142 GPCD.

Method 4 – Savings by Water Use Type

In Urban Water Use Target Method 4 (hereinafter, "Method 4"), DWR breaks the potential savings into four categories: 1) Indoor Residential, 2) Metering, 3) Commercial, Industrial, and Institutional (CII), and 4) Landscaping plus Water Loss. Indoor residential savings can be calculated by tabulating the number of water-efficient toilets, showerheads, and washers that have been installed in the supplier's service area, estimating the percent saturation, and the water use savings. As an alternative, the indoor savings can be set at a default value of 15 GPCD. Metering savings address those agencies that have unmetered connections, which generally does not apply in CWA's service area. A reduction of 10 percent is applied to CII use. 20 percent is applied to landscape and water loss.

Because landscaping water use is difficult to estimate, DWR calculates a combined landscape and water loss value as follows:

Baseline
70 GPCD (Assumes indoor per capita water use)
- CII water use in GPCD
= Landscape/Water Loss

The target is then:
Baseline
- Indoor Residential Savings
- Metering Savings
- CII Reduction
- Landscape/Water Loss Reduction
= Target

This target must be less than the 5-year baseline value.

As further described below, OMWD selected Method 1 as its reporting method for compliance with the Water Conservation Bill of 2009, and Method 1 was adopted as part of the public hearing process for OMWD's draft UWMP. Method 1 was utilized for purposes of determining (1) OMWD's individual interim and urban water use targets, and (2) the regional interim and urban water use targets that were prepared for purposes of a regional alliance.

As mentioned before, CWC § 10608.12(g) defines "Gross Water Use" as the total volume of water entering the distribution system, excluding recycled water, long term storage, conveyance to other water suppliers and possibly agricultural water (except as otherwise provided in subdivision (f) of § 10608.24). OMWD uses its annual reconciliation sheets from CWA to verify the total water entering the OMWD system, including water for agriculture, to calculate each year's gross water use. OMWD does not convey to other suppliers under normal circumstances or have the ability for long term storage.

Population figures from SANDAG, gross annual water use from CWA reconciliation records and GPCD averages and targets follow as **Table 17**. GPCD was calculated by taking the gross water use in AF, multiplied by 325,851 to convert to gallons from AF, divided by population and divided by 365 days in a year.

Table 17 - OMWD GPCD Calculations and Targets

Year	Population	Gross Annual Water Use (FY) AF	Daily Per Capita Water Use GPCD	10-Year Averages GPCD	80% GPCD	5-Year Averages GPCD	90% GPCD	Target GPCD
1990	36,886							
1991	37,509							
1992	38,143							
1993	38,788							
1994	39,444							
1995	40,111	12,230	272					
1996	40,789	14,429	316					
1997	41,479	15,234	328					
1998	42,180	13,680	290					
1999	42,893	16,165	336					
2000	43,623	19,433	398					
2001	49,090	18,586	338					
2002	51,993	21,730	373					
2003	54,477	21,425	351					
2004	56,776	23,690	373	337	270	367		270
2005	57,068	21,052	329	343	275	353		275
2006	58,622	22,561	344	346	277	354		277
2007	62,250	24,613	353	348	279	350	314	279
2008	65,277	24,885	340	354	283	348	319	283
2009	65,889	23,455	318	352	281	337	317	281
2010	66,872	19,992	267	339	271	324	303	271
Source	SANDAG	CWA						

Table 18 shows the 10% Reduction Interim Target of 318 GPCD and the 20% Reduction Target of 283 GPCD per the Water Conservation Bill of 2009.

Table 18 - Interim and 20% Reduction Targets

Target	GPCD
10% Reduction Interim Target in 2010	319
20% Reduction Target in 2020	283

Data from **Table 17** was used to complete **Tables 19, 20 and 21**.

Table 19
Base period ranges

Base	Parameter	Value	Units
10- to 15-year base period	2008 total water deliveries		23,663
	2008 total volume of delivered recycled water		1920
	2008 recycled water as a percent of total deliveries		8%
	Number of years in base period		10
	Year beginning base period range	1998	
	Year ending base period range	2008	
5-year base period	Number of years in base period	5	years
	Year beginning base period range	2004	
	Year ending base period range	2008	

Table 20
Base daily per capita water use — 10- to 15-year range

Base period year		Distribution System Population	Daily system gross	Annual daily per capita water use
Sequence	FiscalYear			
Year 1	1999	42,893	16,165	336
Year 2	2000	43,623	19,433	398
Year 3	2001	49,090	18,586	338
Year 4	2002	51,993	21,760	373
Year 5	2003	54,477	21,425	351
Year 6	2004	56,776	23,690	373
Year 7	2005	57,068	21,052	329
Year 8	2006	58,622	22,561	344
Year 9	2007	62,250	24,613	353
Year 10	2008	65,277	24,885	340
Base Daily Per Capita Water Use				354

Table 21
Base daily per capita water use — 5-year range

Base period year		Distribution System Population	Daily system gross	Annual daily per capita water use
Sequence	FiscalYear			
Year 1	2004	56,776	23,690	367
Year 2	2005	57,068	21,052	353
Year 3	2006	58,622	22,561	354
Year 4	2007	62,250	24,613	350
Year 5	2008	65,277	24,885	348
Base Daily Per Capita Water Use				354

4.7 Regional Alliance

As set forth above, the Water Conservation Bill of 2009 (SBX7-7) requires each urban retail water supplier to develop an urban water use target and an interim urban water use target. Notably, SBX7-7 authorizes urban retail water suppliers to determine and report progress toward achieving these targets on an individual agency basis or pursuant to a regional alliance as provided in CWC § 10608.28(a). The DWR Guidebook and the DWR Methodologies provide guidance to urban retail water suppliers for purposes of forming and carrying out a regional alliance in accordance with CWC § 10608.28(a) and related provisions of SBX7-7. The DWR Guidebook and the DWR Methodologies provide that urban retail water suppliers are eligible to form a regional alliance in accordance with CWC § 10608.28(a) if the suppliers meet at least one of several specified criteria, such as (1) the suppliers are recipients of water from a common wholesale water supplier, or (2) the suppliers are located within the same hydrologic region, which for purposes of a regional alliance refers to the 10 hydrologic regions as shown in the California Water Plan.

OMWD, Vallecitos Water District, San Dieguito Water District, and Rincon del Diablo Municipal Water District have formed a regional alliance pursuant to CWC § 10608.28(a), the DWR Guidebook, and the DWR Methodologies to cooperatively determine and report progress toward achieving their water use targets on a regional basis. All of these members are recipients of water from a common wholesale water supplier, in this case CWA, and all of the members are located within the South Coast Hydrologic Region as shown in the California Water Plan.

The members have entered into a cooperative agreement to establish and carry out a regional alliance and they have jointly notified DWR of the formation of their regional alliance (copies of the Cooperative Agreement and notification to DWR are set forth in **Appendix J**). In accordance with the DWR Guidebook and DWR Methodologies, the members have prepared an urban water use target and an interim urban water use target for the region, which is further set forth herein and within each of the other members' individual UWMPs. Furthermore, each member of the regional alliance has developed its own set of interim and urban water use targets, along with other supporting data and determinations, all of which is included in each member's individual UWMP. OMWD's individual interim and urban water use targets are set forth above in **Tables 17-21**. The regional alliance targets are listed in **Table 22.** The 10% Interim Reduction Target is 227 GPCD and the 20% Reduction Target is 201.

Table 22 - Regional Alliance		
Olivenhain MWD	**2015**	**2020**
GPCD Goal[1]	319	283
Population Projection	66,993	67,987
20x2020 Demand Target (AF)	23,938	21,552
San Dieguito WD	**2,015**	**2,020**
GPCD Goal[1]	180	160
Population Projection	40,515	41,870
20x2020 Demand Target (AF)	8,147	7,484
Vallecitos WD	**2,015**	**2,020**
GPCD Goal[1]	179	159
Population Projection	96,123	98,001
20x2020 Demand Target (AF)	19,273	17,454
Rincon del Diablo MWD	**2,015**	**2,020**
GPCD Goal[1]	239	213
Population Projection	29,212	30,984
20x2020 Demand Target (AF)	7,820	7,392
REGIONAL ALLIANCE	**2,015**	**2,020**
GPCD Goal	227	201
Population Projection	232,843	238,842
20x2020 Demand Target (AF)	59,178	53,882

[1] 2015 goal based on 10% reduction and 2020 goal based on 20% reduction

4.8 Water Use Reduction Plan

The 2010 OMWD UWMP will be implemented in much the same manner as the 2005 UWMP. OMWD will continue to be an active member of the CUWCC and comply with the Memorandum of Understanding (MOU) and BMPs for conservation. OMWD provides free home water-use evaluations and incentivizes the purchase of water-saving devices. It promotes the concepts of water use efficiency through adult education workshops held throughout the year. OMWD will also continue to participate in regional programs coordinated by CWA and MWD.

Based on the results of the previous scenario planning process, OMWD can help ensure a long-term reliable water supply through the following measures:

1. Implementation of projects for alternate water sources such as recycled water and brackish groundwater desalination;
2. Compliance with the Water Conservation Bill of 2009 conservation compliance targets and continuation of CUWCC's BMPs;
3. Continue to implement programs and explore additional planned local projects that could strengthen reliability and help manage potential shortfalls in the development of supplies.

4. Conduct annual tracking and reporting on implementation of management strategies identified in this UWMP to take appropriate action if supply alternatives are not developed as planned.

Rate increases as well as a change in rate structure can also increase conservation. By employing forward-thinking strategies to avoid today's water supply challenges in the future, OMWD is ensuring the cost-effectiveness and long-term reliability of the water for its customers. More on OMWD conservation, education and outreach will be covered in Chapter 7.

OMWD's Water Supply Shortage (WSS) Ordinance, passed July 2008 and revised July 2010, establishes regulations to be implemented during times of declared water shortages, or declared water shortage emergencies. It establishes four levels of drought response actions to be implemented in times of shortage, with increasing restrictions on water use in response to worsening drought conditions and decreasing available supplies. The WSS Ordinance was based upon and is similar to the Model Regional Drought Response Ordinance that was adopted by CWA in March 2008. The WSS Ordinance outlined penalties for violations of mandatory water conservation requirements and is further discussed as part of the WSS contingency planning analysis in Chapter 6.

OMWD is presently faced not only with increased imported water costs but also a limited water supply. To overcome these challenges, in addition to the planned and regular increases (Non-WSS Rates and Charges), staff also adopted WSS Pricing to meet two important objectives. The first objective is to quickly reduce the volume of water used by customers in order to meet the challenge of water supply limitations including the Water Conservation Bill of 2009; the second objective is to remain revenue neutral in the event of revenue shortfall. WSS Pricing was developed consistent with OMWD's WSS Ordinance.

Before adopting WSS Pricing, OMWD conducted a study to determine the price elasticity of water as it relates to triggering and achieving reductions in water use. Price elasticity measures the responsiveness of water use to price changes. The rate model assumes 0.25% price elasticity for nondiscretionary water use and 0.45% for discretionary water use. A 1% increase in water rates would result in a 0.25% reduction in water demand. The 2011 Rates & Rules brochure outlining the current Non-WSS and Water Supply Shortage rates is included as **Appendix P**.

Additionally, in order to avoid operational deficits, depletion of reserves, an inability to address infrastructure and water quality improvements, and to continue to provide a safe and reliable water supply, OMWD issued a notice in 2009 pursuant to Proposition 218 proposing to pass through charges imposed upon OMWD to its customers over a five-year period. These charges included any future CWA charges and rate increases to any existing CWA charges imposed upon OMWD; any future wholesale recycled water cost charges that are imposed on OMWD; annual cost of living increases to the rates for both potable and recycled water for OMWD's costs of operations, maintenance, and capital facilities; and any property tax revenue lost in the event the State of California suspends Proposition 1A or otherwise reallocates property tax allocations. These strategies have ensured that OMWD will maintain adequate revenue even in water supply shortage conditions.

An important strategy to achieve the reduction called for in the Water Conservation Bill of 2009 is through the continued expansion of OMWD's recycled water system. In a partnership with seven other local agencies, OMWD is currently lobbying for federal funding to integrate northern San Diego County's recycled water infrastructure, allowing OMWD to bring recycled water to more neighborhoods

within its service area. Every gallon of recycled water used for irrigation is a gallon of costly drinking water that does not have to be imported. Recycled water remains a cost-effective, reliable method of reducing the need to import water from sources outside Southern California. It is a goal of OMWD to reduce reliance on imported water supplies by continuing to increase its recycled water deliveries to 20% of its total water portfolio by 2019. The planned recycled water system expansions outlined in the CMP will assist OMWD in meeting this goal. Additional discussion regarding opportunities for recycled water use within OMWD's service area is provided in Chapter 5.

Also discussed in Chapter 5, OMWD is planning to decrease reliance on imported water by increasing the use of other local resources. For instance, OMWD continues to study the viability of extraction and treatment to potable standards of brackish groundwater within its service area. In March 2011, OMWD's Board of Directors supported moving forward with additional studies to test brackish water quality and gather additional data. Under this type of planning approach, it is possible that an amount of locally developed water could be provided at a lower cost than water imported from outside the region by 2015.

In addition to OMWD's own efforts, it continues to support the Carlsbad Desalination Project. OMWD passed a resolution in June 2010 enabling CWA and the project's developer, Poseidon Resources, to negotiate a water purchase agreement for the benefit of the entire region. Negotiations are scheduled to begin once the City of Carlsbad passes a similar resolution. Opportunities for increasing desalinated water use are further discussed in Chapter 5.

Chapter 5

Water Sources

This section describes the existing and planned sources of water available to OMWD. In accordance with the Act, it includes a description of each water source, and describes factors affecting the availability and reliability of OMWD's supply during average, single dry, and multiple dry water years. This section also discusses opportunities for short and long-term water exchanges and transfers, alternative water supply measures, and describes the future water supply projects and programs that may be undertaken by OMWD to meet its total projected water demands.

5.1 Wholesale Water Suppliers

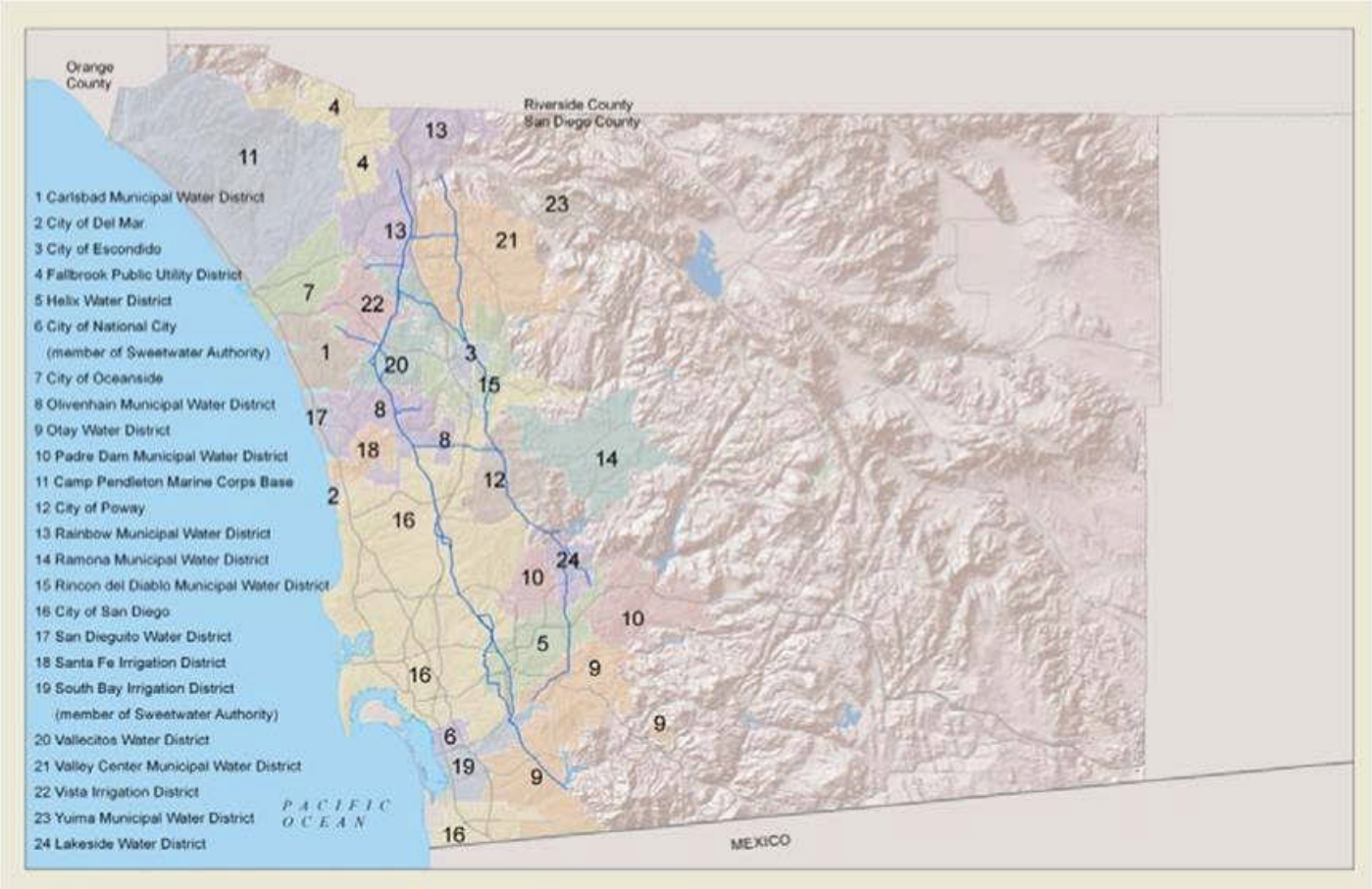
The relationship between MWD and CWA is not contractual but, rather, pursuant to the structure of the MWD Act and other developed processes and protocol. MWD solicits demand projections from its member agencies, uses those demand projections to develop its supply portfolio for the region, and then projects its ability to serve the forecasted demands of its member agencies. CWA is one of MWD's 26 member agencies and OMWD is one of CWA's 24 member agencies. CWA solicits demand projections from its 24 member agencies, uses those demand projections to develop its supply portfolio, and then projects its ability to serve the forecasted demands of its member agencies.

Long-term water supply reliability is provided by CWA and MWD. OMWD relies in large part on CWA for delivery of a sufficient and reliable water supply and for assisting its member agencies in meeting the existing and future water needs of the San Diego region. CWA and MWD are the agencies responsible for planning for the long-term water supply needs of the San Diego and Southern California regions, and the 2010 regional UWMPs prepared by those agencies are included as **Appendix F and G** and incorporated herein. OMWD has relied upon the water supply information provided by CWA and MWD in preparing the OMWD 2010 UWMP and for purposes pf fulfilling the informational requirements of CWC §§ 10631(b) and (c).

5.1.1 San Diego County Water Authority

CWA's boundaries extend from the border with Mexico in the south, to Orange and Riverside counties in the north, and from the Pacific Ocean to the foothills that terminate the coastal plain in the east. With a total of 951,000 acres (1,486 square miles), CWA's service area encompasses most of the western third of San Diego County. **Figure 4** on the following page shows CWA's service area, its member agencies, and aqueducts (shown as blue lines).

Figure 4 – Map of CWA Service Area and Member Agencies



CWA was organized for the primary purpose of supplying imported water to San Diego County for wholesale distribution to its member agencies. These imported water supplies consist of water purchases from MWD, core water transfers from Imperial Irrigation District that are wheeled through MWD's conveyance facilities, and spot water transfers that are pursued on an as-needed basis to offset reductions in supplies from MWD. CWA's 24 member agencies purchase water from CWA for retail distribution within their service territories. A description of CWA's physical water system can be found in its 2010 UWMP, beginning in Section 1.6. Additional information regarding the organization and operation of CWA is provided in CWA's 2010 UWMP. (**Appendix F**, Section I.)

5.1.2 Metropolitan Water District of Southern California

Historically, CWA has relied on imported water supplies purchased from MWD to meet the needs of its member agencies. MWD was formed in 1928 to develop, store, and distribute supplemental water in Southern California for domestic and municipal purposes. MWD supplies water to approximately 19 million people in a service area that includes portions of Ventura, Los Angeles, Orange, San Bernardino, Riverside, and San Diego counties. MWD's service area covers a 70-mile-wide strip of the Southern California coastal plain, extending from the city of Oxnard on the north to the Mexican border. Close to half of the water used in this 5,200-square-mile region is supplied by MWD, and about 90 percent of Southern California's population receives at

least some of its water from MWD. CWA is one of 26 MWD member agencies, and is the largest in terms of purchases, purchasing 331,825 AF, or about 21 percent of all the water MWD delivered in fiscal year 2010. Additional information regarding the organization and operation of MWD is provided in MWD's 2010 UWMP. (**Appendix G**, Section I.)

5.2 Wholesale Water Sources

MWD's supplies come from two primary sources, the State Water Project (SWP) and the Colorado River Aqueduct (CRA). MWD owns and operates the CRA, and has a water supply contract through the State of California for SWP water. The SWP stretches more than 600 miles, from Lake Oroville in the north to Lake Perris in the south. Water is stored at Lake Oroville and released when needed into the Feather River, which flows into the Sacramento River and to the Sacramento–San Joaquin Bay-Delta (Delta). MWD's member agencies received their first deliveries from the CRA in 1941. The aqueduct is more than 240 miles long, beginning at Lake Havasu on the Arizona/California border and ending at Lake Mathews in Riverside County. The aqueduct has capacity to deliver up to 1.25 million AF per year. Additional information regarding the CRA is set forth in MWD's 2010 UWMP. (**Appendix G**, Section II.)

Figure 5 - Conveyance System Map

Colorado River

Water availability from the Colorado River is governed by a system of priorities and water rights that has been established over many years. The Colorado River Lower Basin states (California, Arizona, and Nevada) have an annual apportionment of 7.5 million AF of water divided as follows: (1) California, 4.4 million AF; (2) Arizona, 2.8 million AF; and (3) Nevada, 300,000 AF. The 1931 Seven Party Agreement established priorities for water among California's contractors to use Colorado River water made available to California. The first four priorities total the 4.4 million AF per year available to California. MWD has priorities 4, 5(a), and 5(b) water listed in the Seven Party Agreement, but only priorities 1–4 of the Seven Party Agreement are within California's basic annual apportionment. MWD's fourth priority of 550,000 AF is junior to that of the first three priorities, 3.85 million AF to California agricultural agencies. Water used to satisfy MWD's priorities 5(a) and 5 (b) must come from unused allocations within California, Arizona, or Nevada, or from surpluses declared by the Secretary of the Interior. (See also, **Appendix F**, Section 6, and **Appendix G**, Section III.)

Before 1964, MWD had a firm annual allocation of 1.212 million AF of Colorado River water through contracts with the U.S. Department of the Interior, which was enough to keep MWD's aqueduct full. However, as a result of the U.S. Supreme Court decision in Arizona v. California, MWD's firm supply fell to 550,000 AF, its basic annual apportionment. Due to growth in demand from the other states and drought conditions, since 2003, MWD's deliveries have been limited to its basic annual apportionment plus water resulting from unused apportionment water by other California holders of priorities 1 through 3, and transfer programs resulting from conservation with other senior water right holders. (See also, **Appendix F**, Section 6, and **Appendix G**, Section III.)

Several fish species and other wildlife species either directly or indirectly have the potential to affect Colorado River operations, thus changing power operations and the amount of water deliveries to the CRA. A number of species that are on either "endangered" or "threatened" lists under the federal and/or California Endangered Species Acts are present in the area of the lower Colorado River. To address this issue, a broad-based state/federal/tribal/private regional partnership, which includes water, hydroelectric power, and wildlife management agencies in Arizona, California, and Nevada, developed a multi-species conservation plan for the main stem of the lower Colorado River (the Lower Colorado River Multi-Species Conservation Program [MSCP]). Launched in early 2005, this 50-year plan allows MWD to obtain federal and state permits for any incidental take of protected species resulting from current and future water and power operations and diversions on the Colorado River. The MSCP also covers operations of federal dams and power plants on the Colorado River. (See also, **Appendix F**, Section 6, and **Appendix G**, Section III.)

State Water Project

The SWP is owned by the State of California and is operated by the DWR. MWD holds a Long-Term SWP Water Supply Contract with the State of California and its contractual allotment authorizes MWD to take about 48 percent of the available SWP water deliveries on an annual basis. The Delta is the largest estuary on the west coast of the United States and is also home to an agricultural industry, recreation and fishing, and provides the means by which to deliver water from Northern California to the south. In the north Delta, water is pumped into the North Bay Aqueduct for delivery to Napa and Solano counties. In the south Delta, water is diverted into the SWP's Banks Pumping Plant, where it is lifted into the 444-mile-long California Aqueduct. Some of this water flows into the South Bay Aqueduct to serve areas in Alameda and Santa Clara counties. The remainder flows southward to cities and farms in central and Southern California. In the winter, when demands are lower, water is stored at the San

Luis Reservoir located south of the Delta. SWP facilities provide drinking water to 23 million Californians and 755,000 acres of irrigated farmland. (See also, **Appendix F**, Section 6, and **Appendix G**, Section III.)

The reliability of SWP supplies is limited by both the level of SWP supply development and pumping restrictions due to state and federal environmental regulations and hydrology. DWR's 2009 State Water Project Delivery Reliability Report updated DWR's estimate of the current and future water delivery reliability of the SWP. The 2009 report showed that future deliveries will be further impacted by significant restrictions due to operational requirements contained in federal biological opinions and forecasted effects of climate change, which is changing the hydrologic conditions of the state. MWD's SWP deliveries projection listed in its UWMP are based on DWR's Draft 2009 Report. For dry, below-normal conditions, MWD also developed its Central Valley storage and transfer programs to increase its supply capabilities.

Numerous factors contribute to the degradation of the Delta ecosystem and the decline of Delta fisheries, such as habitat loss, water diversions, non-point source pollution, over-fishing, and the introduction of nonnative species. Regulatory protection efforts have nevertheless tended to focus on the operations of the SWP and the federal Central Valley Project (CVP). The most recent set of restrictions emerged in 2007, when the Federal District Court for the Eastern District of California invalidated the Biological Opinion (BiOp) prepared by the U.S. Fish and Wildlife Service (USFWS) for the Delta smelt and imposed a set of interim operating restrictions that limited the manner in which SWP and CVP water could be exported from the Delta. The court ordered the interim operating restrictions to remain in place until a new BiOp was prepared by USFWS. In December 2008, USFWS issued a new BiOp for the Delta smelt. That BiOp imposed an operating regime for the SWP and CVP that was even more restrictive than the interim restrictions imposed by the court. MWD and other state water contractors filed separate lawsuits challenging the USFWS 2008 BiOp (The Consolidated Delta Smelt Cases).

In December 2010, the District Court issued a decision invalidating the USFWS 2008 BiOp. Following that decision, the court held additional proceedings to establish operating parameters for the SWP and CVP pending the preparation of yet another BiOp.

In a separate case, in 2008 the United States District Court for the Eastern District invalidated the BiOp prepared by the National Marine Fisheries Service (NMFS) for spring- and winter-run Chinook salmon, Central Valley steelhead, green sturgeon, and Southern Resident killer whales. Notably, although the court ordered NMFS to prepare a new BiOp, it did not impose operating restrictions beyond those established in the Delta smelt litigation while the new NMFS BiOp was being prepared. On June 4, 2009, NMFS issued a new BiOp. Like the new USFWS BiOp issued for Delta smelt (above), the new NMFS BiOp imposed additional restrictions on SWP and CVP operations. MWD and other state water contractors filed separate lawsuits challenging the USFWS 2008 BiOp (The Consolidated Salmon Cases). In 2010, the District Court granted a preliminary injunction against the federal government's implementation of pumping restrictions under the 2009 NMFS BiOp. Among other findings, the court ruled that the federal government had not properly taken into account the impact the restrictions would have on people in the Central Valley and had not established an adequate scientific justification for imposing the water supply restrictions established in the BiOp. A final decision in the Consolidated Salmon Cases is expected in 2011.

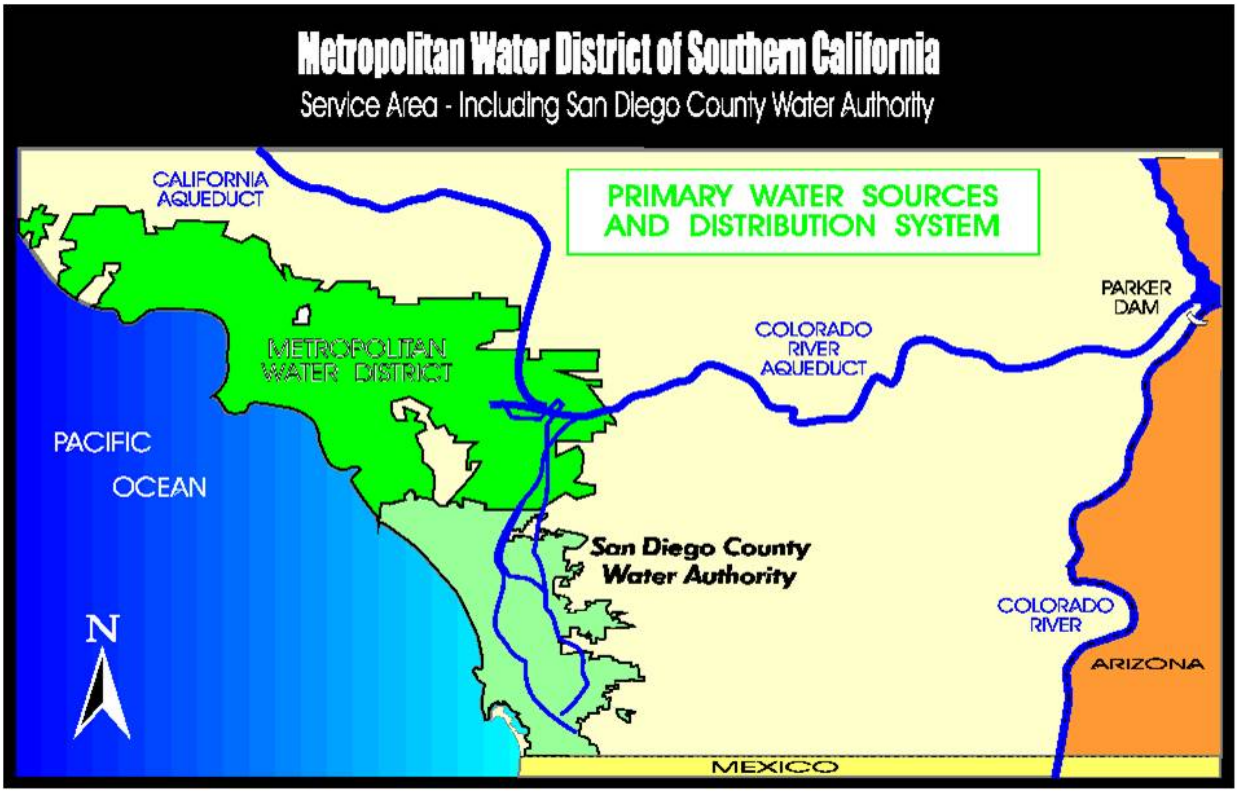
Additional discussion regarding factors having the potential to affect the availability and reliability of SWP supplies is set forth in **Appendix K**.

As indicated above, DWR continues to evaluate the issues affecting SWP exports from the Delta and how those issues may affect the long-term availability and reliability of SWP deliveries to the SWP Contractors, including MWD. According to the DWR 2009 Report, the long-term average delivery of contractual SWP Table A supply is projected to be 60 percent under current and future conditions over the 20-year projection. Within that long-term average, SWP Table A deliveries can range from 7 percent (single dry year) to 68 percent (single wet year) of contractual amounts under current conditions, and from 11 percent (single dry year) to 97 percent (single wet year) under future conditions. Contractual amounts are projected to range from 32 to 38 percent during multiple-dry year periods, and from 79 to 93 percent during multiple wet periods.

To ensure a conservative analysis, the DWR 2009 Report expressly assumes and accounts for the institutional, environmental, regulatory, and legal factors affecting SWP supplies, including but not limited to water quality constraints, fishery protections, other requirements of State Water Resources Control Board Decision D-1641, and the operational limitations imposed by the USFWS and NMFS BiOps that are discussed above. The DWR 2009 Report also considers the potential effects of Delta levee failures and other seismic or flood events. Notably, the DWR 2009 Report assumes that all of these restrictions and limitations will remain in place over the next 20-year period and that no actions to improve the Delta will occur, even though numerous legal challenges, various Delta restoration processes, and new legal requirements for Delta improvements are currently underway (i.e., Bay Delta Conservation Plan (BDCP), Delta Vision, Delta Plan, etc.). Finally, DWR's long-term SWP delivery reliability analyses incorporate assumptions intended to account for potential supply shortfalls related to global climate change. DWR's 2009 Report demonstrates that the projected long-term average delivery amounts of contractual SWP Table A supplies have decreased in comparison to previous estimates. However, as noted, the projections developed by DWR are predicated on extremely conservative assumptions, which make the projections useful from a long-range urban water supply planning perspective. Indeed, recent rulings in various legal actions and other factors described above, among others, support higher estimates of average annual SWP deliveries than projected in DWR's 2009 Report. While this may lead DWR to increase its projections in its next scheduled report, the 2009 Report remains the best available information concerning the long-term delivery reliability of SWP supplies.

In developing its supply capabilities, MWD has utilized the DWR 2009 Report and a broad range of additional data in projecting that a new Delta conveyance system will be fully operational by 2022 and will return SWP supply reliability to conditions similar to what existed in 2005. Meanwhile, to deal with emerging challenges from dry hydrologic conditions and regulatory restrictions that limit supplies from the SWP and the CRA, MWD's strategy includes utilizing its storage programs to maximize available supplies in wet years for dry years' use. It manages its storage portfolio by storing water during wet years to meet the region's needs during critical droughts caused by varied hydrologic conditions and SWP pumping restrictions imposed to protect endangered or threatened fish species. MWD has about 30 storage programs in operation that provide flexibility to meet delivery requirements. The storage accounts include groundwater and surface storage programs and facilities, within and outside of MWD's service area. (See also, **Appendix F**, Section 5, and **Appendix G**, Section lll.)

Figure 6 - MWD Service Area Map



5.3 OMWD Supplies

Water supply in OMWD's service area has historically been very reliable, and OMWD prides itself on operating a well-maintained and high-quality water system. OMWD's water distribution system is sized to meet fire flow demand conditions. There are no existing or anticipated capacity restrictions that affect service to any OMWD customers.

While OMWD relies in large part on MWD and CWA for a sufficient and reliable imported water supply, it is also developing its own supplies to increase its overall water supply reliability. Among other projects and programs, OMWD is planning a local supply project near San Elijo Lagoon consisting of a well field to extract groundwater. Indeed, OMWD has included $15 million in its updated Capital Spending Plan (CSP) for this purpose. OMWD also included $6.5 million in its CSP to expand recycled water projects.

5.4 Alternative Water Supply Measures

Alternative water supply measures have been identified as appropriate for implementation within OMWD's service area. Where applicable, the unit cost of an alternative water supply measure is compared to OMWD's marginal cost of conventional supplies. Other relevant considerations are also discussed. As set forth below, diversification of water supply sources reduces OMWD's operational risks and reliance on CWA as the single source of water supply in the region. OMWD's goal is to be 33% less dependent on purchased water from CWA in 2020. 20% of OMWD's water supply will come from recycled water sources through expansion of its existing recycled water system and recycled water

purchases from other agencies. The remaining 13% will come from other local sources, potentially including treated brackish groundwater and desalinated seawater.

5.4.1 Recycled Water Opportunities

Water recycling is the treatment and reuse of municipal wastewater for irrigation and other non-potable uses. Recycled water benefits the region's water supply by reducing imported water demands and by providing a drought-resistant local water supply.

OMWD serves recycled water to two distinct areas of OMWD's service, one in the northwest portion of the service area and one in the southern portion of the service area.

South

In July 1998, OMWD assumed responsibility for sewage collection, treatment and disposal from the County of San Diego for two areas within its boundaries. These areas include 4S Ranch, Rancho Cielo and the unincorporated area surrounding them. These two areas encompass a total of approximately 4,000 acres containing single family dwelling units in addition to a variety of other commercial and public uses.

Through an extensive sewage collection system and sewage pumping stations, the 4S Ranch Water Reclamation Facility (4S WRF) is able to treat all wastewater effluent received, and produce high-quality recycled water for non-potable irrigation uses such as golf courses, parks, schools, and greenbelts within developed areas. The 4S WRF is a 2.0 million gallon per day (MGD) water reclamation facility and has the capacity to provide sewer collection and Title 22 tertiary-level treatment services to ultimate build-out, currently projected at 7,500 EDUs.

The recycled water system facilities include a 3 million gallons (MG) recycled water blending reservoir, several pump stations, a 1 MG recycled water tank, and over 5 miles of recycled water pipeline ranging in size from 12 inches to 20 inches. A map depicting OMWD's recycled water service quadrants is included on the following page as Figure 3.

In 2010, the 4S WRF collected and treated about 1,100 AF of wastewater. OMWD originally believed the 4S WRF would be treating 2,000 AF in 2005; however, construction of the facility was delayed while negotiating with DHS for certification of the UV disinfection system. Recycled water production was limited to 1 MGD during this period.

In addition to recycling its own water at its 4S WRF (1,100 AF/year), OMWD purchases recycled water from neighboring agencies. Sources include the City of San Diego's North City Reclamation Plant (800 AF/year) and the Santa Fe Valley Water Reclamation Facility (110 AF/year). By 2020, OMWD hopes to meet 20% of its water deliveries with recycled water.

North

OMWD has constructed approximately 2.9 miles of 8 and 12-inch diameter recycled water pipelines within existing streets in the northern portion of the City of Encinitas and the southern portion of the City of Carlsbad. Recycled water became available in this area as a result of the "Northwest Quadrant (NWQ) Recycled Water Pipelines Project," which provides recycled water from Vallecitos Water District's Mahr Reservoir. The area served by the project was identified by the 1996 Recycled Water Master Plan as having a significant number of landscape irrigation users and close proximity to a source of recycled water. OMWD does not have the facilities to serve the area with recycled water from the 4S WRF. In anticipation of future recycled water service, OMWD has previously installed or required developers to install pipelines in the NWQ that eventually became dedicated recycled water services. OMWD received a grant for the NWQ Project in the amount of $500,000 from the U.S. Department of the Interior.

The production and distribution of recycled water within OMWD's service area is accomplished through cooperative interagency agreements between OMWD, the City of San Diego, the City of Carlsbad, Rancho Santa Fe Community Services District and Vallecitos Water District. OMWD developed its CMP in coordination with these participating agencies with the result of developing recycled water use programs that have a regional benefit and assist other agencies with meeting their water reclamation goals.

OMWD has taken a cooperative, regional approach in expanding the availability of recycled water to its customers by partnering with nine other agencies to study greater interconnection and development of northern San Diego County's recycled water infrastructure. The North San Diego County Regional Recycled Water Project was selected by San Diego's Integrated Regional Water Management Regional Advisory Committee to receive $1.5 million in state grant funds for the recycled water infrastructure, and the group is pursuing Title XVI funds at the federal level. Recycled water system feasibility studies are underway for greater local water supply reliability for northern San Diego County residents.

OMWD also participates in MWD's Local Resources Program (LRP) and the CWA Recycled Water Development Fund Program. These programs provide regional funding to offset the initial cost of recycled water production.

Table 23 on the following page shows the amount of recycled water OMWD projected to use in 2010 and the actual use. OMWD attributes the difference to economic conditions which slowed retrofits and conversion projects, water use restrictions resulting from the drought declared in 2008, and recent wet weather.

Table 23 Recycled water — 2005 UWMP use projection compared to 2010 actual in AF		
Use type	2010 Actual use	2005 Projection for
Agricultural irrigation	0	
Landscape irrigation	985	3,320
Commercial irrigation	742	
Golf course irrigation	770	
Wildlife habitat		Not broken down by type
Wetlands		
Industrial reuse		
Groundwater recharge		
Seawater barrier		
Getothermal/Energy		
Indirect potable reuse		
Seawater discharge		
Other (user type)		
Total	2,497	3,320

Table 24 shows potential future use of recycled water by OMWD.

Table 24 Recycled water — potential future use in AF							
User type	Description	Feasibility	2015	2020	2025	2030	2035
Agricultural irrigation		10%	0	0	0	0	0
Landscape irrigation	HOA common areas	100%	1,452	1,952	2,152	2,152	2,152
Commercial irrigation		0%	0	0	0	0	0
Golf course irrigation	Course irrigation	100%	1,748	2,148	2,148	2,148	2,148
Wildlife habitat		0%	0	0	0	0	0
Wetlands		0%	0	0	0	0	
Industrial reuse		0%	0	0	0	0	0
Groundwater recharge		10%	0	0	0	0	0
Seawater barrier		5%	0	0	0	0	0
Getothermal/Energy		0%	0	0	0	0	0
Indirect potable reuse		5%	0	0	0	0	0
Other (user type)							
Other (user type)							
Total		2	3,200	4,100	4,300	4,300	4,300

5.4.2 Promoting the Use of Recycled Water

California's Recycling Law (CWC § 13500, et seq.) establishes a policy to encourage the use of recycled water and provides that the use of potable domestic water for the irrigation of green belt areas, cemeteries, golf courses, parks, and highway landscaped areas constitutes an unreasonable use of water where recycled water is available for such uses, as further set forth by statute. Among other provisions, CWC §§ 71610 and 71611 authorize OMWD to provide and sell recycled and non-potable water within OMWD's service area. It is the policy of OMWD's Board of Directors to encourage and mandate the development of recycled water and non-potable water within OMWD's service area to meet the growing demand for water.

To promote the use of recycled water by its customers, OMWD adopted mandatory use Non-Potable Water Ordinance 173 (Ordinance 173) that requires new irrigation and other qualifying customers to use recycled water when and where available. Conditions of the ordinance are incorporated into detailed "conditions of service" agreements that OMWD signs with new customers. The agreements stipulate that when recycled water is available, the users shall retrofit their facilities to utilize recycled water. OMWD also requires the installation of purple pipe in new facilities to facilitate conversion to recycled water use when the water is available. The cost of recycled water is currently 90% of the cost of treated water, and recycled water customers pay reduced capacity fees, however; OMWD will undertake a cost service analysis in 2011 and may revise its rates accordingly with the outcome of the study. A copy of OMWD's Ordinance 173 is included in **Appendix L**.

For developments constructed in OMWD's service area before Ordinance 173, the financial means to retrofit systems in order to take recycled water may not be readily available. In order to facilitate such retrofits, OMWD's Board of Directors established the Recycled Water Loan Program. The loan provides the initial capital to start the retrofit project and requires the funds to be paid back to OMWD within three years. Customers continue to pay the potable cost for water and the difference between the recycled rate and potable rate is used to pay off the loan.

In addition to OMWD's efforts, agencies throughout San Diego County are presently in an intensive phase of water recycling planning and construction. OMWD is coordinating its recycling planning activities with CWA. Additional information on area wide recycling planning is set forth in CWA's UWMP, which details projects and programs such as Marine Corps Base Camp Pendleton's expanded production and use of recycled water whereby 4,000 AF/year of recycled water will be beneficially used throughout the military base by 2015. [See **Appendix F**, Section 5.45.]

Table 25 on the next page shows OMWD's methods to encourage recycled water use. Although the interest-free loan program to assist in funding customer recycled water retrofit projects has been available for over a decade, no customer has taken advantage of the program.

Table 25 Methods to encourage recycled water use						
	Projected results					
Actions	2010	2015	2020	2025	2030	2035
Financial incentives	0	0	0	0	0	0
Orinance 173	2,123	2,720	3,485	3,655	3,655	3,655
Loan program for conversion	0	0	0	0	0	0
Discounted rate (10%)	375	480	615	645	645	645
Total	2,498	3,200	4,100	4,300	4,300	4,300
No customer has taken advantage of the loan program.						

5.4.3 Wastewater Collection and Treatment

Within OMWD's boundaries, special districts provide wastewater collection and treatment. These special districts include the following:

- Olivenhain Municipal Water District
- Leucadia Wastewater District/Encina Wastewater Authority
- Rancho Santa Fe Community Services District
- Fairbanks Ranch Community Services District
- Whispering Palms Community Services District
- City of Encinitas/San Elijo Joint Powers Authority
- City of San Diego

Each of these agencies collects and treats wastewater from their service area to either secondary or tertiary levels depending upon their individual permit requirements and their disposal method. Some agencies, such as the San Elijo JPA and City of San Diego, only treat the effluent to secondary levels because they use an ocean outfall or percolation pond for disposal. Other agencies, such as OMWD, treat to full Title 22 tertiary levels for beneficial reuse of the recycled water.

Due to the overlapping nature of the boundaries of the agencies providing wastewater collection and treatment, it is very difficult to quantify how much of the wastewater collected and treated by each of the above agencies is solely from within OMWD's service area. No agency maintains flow records delineated by other jurisdictional boundaries and accurate data is consequently unavailable. **Table 26** shows an estimation of the miles of pipeline in each collection system, and corresponding maps are included in **Appendix M**.

Table 26 - Other sanitation agencies within OMWD's service area	
Agency	Estimated miles of sewer line
Leucadia Wastewater District/Encina Wastewater Authority	143.8
City of Solana Beach	2.4
City of Encinitas/San Elijo Joint Powers Authority	53.3
Fairbanks Ranch CSD	4.24
Whispering Palms CSD	35.12
Rancho Santa Fe CSD	58.01
City of San Diego	4.68
Total miles of sewer lines by other agencies	301.55

An estimate of the amount of wastewater collected from within the OMWD boundaries could be calculated by utilizing the amount of treated potable water purchased by customers with the OMWD's boundaries. Based on historical averages, approximately 60 to 70 percent of all water used by customers is for landscape irrigation. Of the 30 to 40 percent of the water used for activities other than irrigation, approximately 80 percent is discharged as wastewater requiring collection and treatment via showers, toilets, washing machines, sinks, etc. This number is variable each year as population increases within OMWD's boundaries.

Table 27 and **Table 28** contain estimates of wastewater collection, treatment and disposal.

Table 27

Recycled water — wastewater collection and treatment in AF

Type of wastewater	2005	2010	2015	2020	2025	2030	2035
Wastewater collected & treated in service area	7,088	7,797	8,577	9,435	10,379	11,417	12,559
Volume that meets recycled water standard	7,088	7,797	8,577	9,435	10,379	11,417	12,559

Table 28

Recycled water — non-recycled wastewater disposal in AF

Method of disposal	Treatment level	2010	2015	2020	2025	2030	2035
Landscape Irrigation	tertiary	3,320	3,750	3,700	3,700	3,700	3,700
Seawater Discharge	secondary	6,145	4,979	5,741	6,358	6,786	7,465
	Total	9,465	8,729	9,441	10,058	10,486	11,165

Currently, OMWD is the only agency serving recycled water within its service area. All wastewater that is collected by OMWD meets recycled water standards.

5.5 Groundwater

Improved uses of local surface and groundwater supplies have the potential to benefit the region by reducing the need for imported water. Currently, OMWD purchases all of its potable water from CWA and does not utilize local surface or groundwater supplies, however; it is currently studying the opportunity for brackish desalinization of groundwater in its service area. This potential project is discussed in Section 5.7. **Table 29** and **Table 30** on the next page show groundwater efforts for OMWD.

Table 29 Groundwater — volume pumped in AF						
Basin name(s)	Metered or Unmetered	2006	2007	2008	2009	2010
No current groundwater being pumped	N/A	0	0	0	0	0
Total groundwater pumped		0	0	0	0	0
Percent of total water supply		0.0%	0.00%	0.00%	0.00%	0.00%

Table 30 Groundwater — volume projected to be pumped in AF					
Basin name(s)	2015	2020	2025	2030	2035
No groundwater projected to be pumped	N/A	0	0	0	0
Total groundwater pumped	0	0	0	0	0
Percent of total water supply	0.00%	0.00%	0.00%	0.00%	0.00%

5.6 Transfer Opportunities

Exchanges and transfers are projects that allow for surplus water of one agency to be used or stored for future use by another agency. Both CWA and MWD are actively engaged in exchanges and transfers designed to increase the storage of wet year surplus water for use in dry years. Additional information regarding the exchange and transfer activities of CWA and MWD are set forth in their respective 2010 UWMPs.

In the future, there may be the possibility of purchasing water from other wholesalers. Currently, MWD owns the infrastructure that delivers water to CWA who wholesales the water to local water agencies. The costs of maintaining the infrastructure are a large factor in water expenses.

As a member agency of CWA, which in turn is a member agency of MWD, OMWD shares its imported water supply with all of the Southern California south coastal plain, using only what it needs when it needs it. OMWD does not currently control any water resources or major storage facilities of its own, and therefore is not now in a position to engage in significant exchanges and transfers.

Table 31 Transfer and exchange opportunities in AF			
Transfer agency	Transfer or exchange	Short term or long term	Proposed Volume
No opportunities identified	0	0	0
Total	0	0	0

OMWD maintains emergency system interconnections with its neighboring retail water agencies. These interconnections allow for the transfer of limited amounts of water between agencies during emergencies and other short-term supply outages. See **Appendix N** for a copy of OMWD's "Emergency Exchange Interconnections" matrix.

5.7 Desalinated Water Opportunities

OMWD is currently studying a project by which to generate 1.0 MGD of desalinated groundwater to its customers. The supply would come from wells in the vicinity of the San Elijo Lagoon, and a pipeline would deliver the raw water to a reverse osmosis desalination treatment plant nearby. The product would then be delivered into the existing potable water system. The brine from the RO membranes would be conveyed through a new pipeline to the San Elijo JPA's Water Reclamation Facility or directly to its ocean outfall.

OMWD sits adjacent to the world's largest water supply: the Pacific Ocean. With a dissolved mineral content of roughly 35,000 parts per million (ppm), however, ocean water is unfit for either drinking or irrigation. The technology exists for desalting ocean water to a high level of purity. Leading desalination technologies include distillation methods and membrane treatment such as reverse osmosis. Distillation methods involve heating salt water to produce steam, which is then collected and condensed as freshwater. Reverse osmosis involves forcing salt water at very high pressures through specially designed semipermeable membranes that act as a filter to salt and other dissolved minerals.

Once prohibitively expensive, seawater desalination is now a practical, cost-competitive source of new water for residents and businesses throughout our semiarid region. A seawater desalination project on the site of the Encina Power Station in the City of Carlsbad is currently being negotiated. OMWD has supported this regional effort to develop a desalination facility that will generate up to 56,000 AF annually of potable water for use throughout San Diego County.

5.8 Future Water Projects

OMWD's future water supply projects are discussed in detail in Section 5.4.1 and in Section 5.7.

Table 32
Future water supply projects

Project name	Projected start date	Projected completion date	Potential project constraints	Normal-year supply	Single-dry year supply	Multiple-dry year first year supply	Multiple-dry year second year supply	Multiple-dry year third year supply
Brackish Desal	2,012	2,015	feasibility	1,120	1,120	1,120	1,120	1,120
Recycled	underway	through 2020	funding	3,200-4,300	3,200-4,300	3,200-4,300	3,200-4,300	3,200-4,300
			Total	4,320-5,420	4,320-5,420	43,20-5,420	4,320-5,420	4,320-5,420

5.9 Factors Affecting Reliability

Factors affecting CWA and MWD supply reliability such as the endangered fish in the Sacramento-San Joaquin Bay-Delta, were previously mentioned. There can be supply challenges at the local level due to emergency situations and this section discusses addressing various water supply shortages from an operational level and the financial considerations involved in a water supply shortage. Water agencies now also need to consider possible effects of climate change.

Table 33
Factors resulting in inconsistency of supply

Water supply sources	Specific source name, if any	Limitation quantification	Legal	Environmental	Water quality	Climatic	Additional information
Imported	SDCWA	not known	0	0	0	0	
Brackish Desal		not known	0	0	0	0	
Recycled		nont known	0	0	0	0	

There are no known impacts from factors resulting in inconsistency of supply. To date, anticipated inconsistencies under OMWD control have been mitigated.

5.9.1 Water Quality

With regard to water quality, OMWD meets or exceeds all state and federal water quality standards for drinking water. OMWD's DCMWTP utilizes membrane technology that provides more certain removal of waterborne health threats while also benefiting the environment through less chemical usage. In 2010, approximately 96% of all water delivered to OMWD customers was treated by the DCMWTP.

In 2007, MWD began fluoridating the water at its Skinner Water Treatment Plant in Riverside. OMWD customers currently receive a blend of less than 0.6 milligrams per liter. OMWD may incorporate fluoridation if funding becomes available.

OMWD publishes an annual water quality report, the Consumer Confidence Report; the report is mailed to all its constituents, posted on its web page, and displayed in its lobby. Water quality is a major factor in any OMWD endeavor; however, OMWD does not anticipate any shortage or impact to availability of supply due to water quality issues**.**

Upon the completion of the Unit AA pipeline in early 2012, OMWD will have three sources of water to select from when operating the DCMWTP. Water can be drawn from the Olivenhain Reservoir, CWA's 78 inch pipeline, or the Unit AA Pipeline. OMWD will have some ability to blend between water sources, thus mitigating any water quality impacts from creating production issues for the plant.

The DCMWTP is a robust plant and can handle many types of water quality upsets without any impact on the quality of the product water. The primary impact is a reduction in overall capacity as well as increased chemical and electrical costs.

Should the water quality prove to be more than can be managed effectively at the DCMWTP, OMWD has backup connections to the CWA potable water aqueduct system that can provide 100% redundancy of supply for customers. In addition, OMWD has 23 interconnections with neighboring agencies that can be used to supplement supplies from any source.

CWA does not expect any shortages due to water quality and the reader is referred to CWA's UWMP Section 7 for more information on the quality of water provided to OMWD and measures that can be taken if water quality issues arise.

Table 34
Water quality — current and projected water supply impacts

Water source	Description of condition	2010	2015	2020	2025	2030	2035
SDCWA	Legal, Environmental, WQ, or Climatic	0	0	0	0	0	0
Brackish Desal	Legal, Environmental, WQ, or Climatic	0	0	0	0	0	0
Recycled	Legal, Environmental, WQ, or Climatic	0	0	0	0	0	0
	Totals	0	0	0	0		
OMWD looks to wholesalers to plan for the region.							
There are no known impacts from factors resulting in inconsistency of supply. To date, anticipated inconsistencies under OMWD control have been mitigated.							

5.9.2 Potential Effects of Climate Change

Water managers must consider the potential influence climate change may have on the projected supplies. Because there are still too many uncertainties regarding the impact of climate change on supplies and demands, a qualitative risk assessment is conducted. The assessment is based primarily on DWR's October 2008 report entitled "Managing an Uncertain Future; Climate Change Adaptation Strategies for California's Water" contained in CWA's UWMP.

According to DWR, when evaluating the potential effects of climate change on long-term water supply planning, a distinction should be made between climate and weather. Weather consists of the short-term (minutes to months) changes in the atmosphere. Climate is how the atmosphere "behaves" over relatively long periods of time. The term climate change refers to changes in long-term averages of daily weather. Changes to climate will be gradual, providing water supply agencies the ability to adapt planning strategies to manage for the supply uncertainties. The effect on supply would be gradual and captured in each five-year update to the UWMP.

Researchers have concluded that increasing atmospheric concentrations of greenhouse gases, such as carbon dioxide, are causing the Earth's air temperature to rise. While uncertainties remain regarding the exact timing, magnitude, and regional impacts of the temperature and potential precipitation changes due to climate change, researchers have identified several areas of concern that could influence long-term water supply

reliability. These potential areas have been extensively analyzed by DWR and other agencies and are listed below:

Loss of Natural Snowpack Storage

Rising temperatures reduce snowpack in the Sierra Nevada because more precipitation falls as rain, and snowmelt occurs sooner. Snowpack in the Sierra Nevada is the primary source of supply for the SWP. Snowpack is often considered a large surface "reservoir," where water is slowly released between April and July each year. Much of the state's water infrastructure was designed to capture the slow spring runoff and deliver it during the drier summer and fall months. DWR projects that the Sierra snowpack will experience a 25 to 40 percent reduction from its historic average by 2050.

Sea Level Rise

Rising sea levels could increase the risk of damage to water and water recycling facilities from storms, high-tide events, and erosion of levees. A potential catastrophic levee failure in the Delta could interrupt supplies from the SWP, potentially reducing supply deliveries to the San Diego region from MWD. In addition, rising sea levels could cause saltwater intrusion into the Delta, degrading drinking water quality. More freshwater releases from upstream reservoirs would be required to repel the sea to maintain salinity levels for municipal, industrial, and agricultural uses.

Changes in Average Precipitation and Runoff Volume

The effect of climate change on overall precipitation and runoff volumes is still unclear and highly uncertain. For example, a number of studies conclude that the flow of the Colorado River may be reduced by climate change, but a wide disparity exists on the predicted volume. The yield from local surface water resources could potentially be reduced, if annual runoff volumes are reduced due to a decline in precipitation or there is an increase in evapotranspiration in reservoirs. It must be highlighted that research is still highly unclear on how precipitation levels may be impacted by climate change.

Water Demands

Climate change could also gradually affect water demands out in the future. Warmer temperatures increase evapotranspiration rates and growing season, which are likely to increase outdoor consumptive water use for landscaping. As part of the water demand forecasting effort for CWA's UWMP, the long-term influence of climate change on demands in the San Diego region was evaluated. Results from the analysis are included in Section 2 of CWA's UWMP.

The above factors focus on the potential effect climate change could have on future supply reliability. The potential long-term effect is a possible decrease in the availability of imported supplies from MWD and local supplies – causing a potential gap between supply and demands. According to studies, supply and demand impacts from climate change may start to be experienced within the 2010 UWMP 25-year planning horizon, but impacts are not quantifiable at this time. If impacts are experienced, they may be considered in establishing strategies that provide water supply benefits within the planning horizon, while increasing the ability to manage potential climate change impacts in the future.

Warming temperatures, combined with potential changes in rainfall and runoff patterns, could exacerbate the frequency and intensity of droughts. More research will be conducted on climate change and the effects on water supply reliability.

Chapter 6

Water Supply Reliability and Water Shortage Contingency Planning

6.1 Water Service Reliability Assessment

Since the mid-1990s, CWA has utilized an econometric model to develop its long-range municipal and industrial (M&I) demand forecasts. This computer model is based on the U.S. Army Corps of Engineers Municipal And Industrial Needs (MAIN) model, which has over a quarter of a century of practical application and is used by many cities and water agencies throughout the United States. CWA's version of the model, known as CWA-MAIN, was modified by a consultant to reflect the San Diego region's unique parameters. The CWA-MAIN model relates historic water demand patterns to variables such as household income, consumer response to the price of water, and weather, to predict future M&I water demands. These datasets are compiled from various sources, including SANDAG, CWA member agencies, and the Scripps Institute of Oceanography. Under the terms of a 1992 memorandum of understanding between CWA and SANDAG, CWA utilizes SANDAG's official forecast to project consumptive water demands for the region. This coordination ensures linkage between local jurisdictions' general plans and CWA's projected water demands.

6.1.1 Normal Year Scenario

If MWD, CWA, and OMWD supplies are developed as planned, along with achievement of the Water Conservation Bill of 2009 retail conservation target, no shortages are anticipated within OMWD's service area in a normal year through 2035. As part of preparation of its UWMP, CWA identified OMWD's demands and in turn, MWD identified CWA's demands in MWD's UWMP, which are shown to be adequate to cover the demands for the entire San Diego region. (CWC § 10631(k).) **Table 35** shows a normal year assessment.

Table 35

Supply and demand comparison — normal year

	2015	2020	2025	2030	2035
Supply totals	24,318	26,212	27,972	29,986	31,192
Demand totals	24,318	26,212	27,972	29,986	31,192
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

Any shortfall in local supply development will be covered by CWA imported water.

6.1.2 Single Dry Year Scenario

In addition to a normal water year assessment, the Act requires an assessment to compare supply and demands under single dry and multiple dry water years over the next 20 years, in five-year increments. **Table 36** shows the single dry-year assessment. The projections are based on historic 1990 supplies during the 1987-1992 drought years, and information developed by and obtained from CWA and MWD. The supplies available from projected recycling and brackish desalinization projects are expected to experience little, if any, reduction in a dry year as these sources are fairly constant and are not subject to as many restrictions as imported water supplies. CWA's existing and planned supplies from the Imperial Irrigation District (IID) transfer, canal lining projects, and seawater desalination are also considered "drought-proof" supplies as fully discussed in Section 4 of its UWMP.

For this single dry-year assessment, information and analyses set forth in MWD's 2010 UWMP and CWA's 2010 UWMP was utilized to show that MWD would have adequate supplies in storage and would not be allocating supplies. With the previous years leading up to the single dry year being wet or average hydrologic conditions, MWD is projected to have adequate supplies in storage to cover potential shortfalls in core supplies and would not need to implement its Water Supply Allocation Plan. If MWD, CWA and OMWD supplies are developed as planned, along with achievement of the Water Conservation Bill of 2009 urban retail water conservation targets, no shortages are anticipated within OMWD's service area in a single dry year through 2035.

Table 36
Supply and demand comparison - single dry year

	2015	2020	2025	2030	2035
Supply totals	24,318	26,212	27,972	29,986	31,192
Demand totals	24,318	26,212	27,972	29,986	31,192
Difference	0	0	0	0	0
Difference as % of Supply	0.0%	0.0%	0.0%	0.0%	0.0%
Difference as % of Demand	0.0%	0.0%	0.0%	0.0%	0.0%

6.1.3 Multiple Dry Year Scenario

In accordance with the Act, **Table 37** on the next page shows the multiple dry water year assessments in five-year increments. The projections are reflective of supplies available during the 1987-92 drought, in years 1989, 1990, 1991 and 1992.

Table 37 Supply and demand comparison - multiple dry-year events						
		2015	2020	2025	2030	2035
	New sources	4,320	5,220	5,420	5,420	5,420
Multiple-dry year first year supply	Supply totals	28,638	31,432	33,392	35,406	36,612
	Demand totals	25,799	26,998	28,811	30,886	32,128
	Difference	2,839	4,434	4,581	4,520	4,484
	Difference as % of Supply	9.9%	14.1%	13.7%	12.8%	12.2%
	Difference as % of Demand	11.0%	16.4%	15.9%	14.6%	14.0%
	New sources	4,320	5,220	5,420	5,420	5,420
	Supply totals	28,638	31,432	33,392	35,406	36,612
	Demand totals	27,347	28,618	30,540	32,739	34,056
Multiple-dry year	Difference	1,291	2,814	2,852	2,667	2,556
second year supply	Difference as % of Supply	4.5%	9.0%	8.5%	7.5%	7.0%
	Difference as % of Demand	4.7%	9.8%	9.3%	8.1%	7.5%
	New sources	4,320	5,220	5,420	5,420	5,420
Multiple-dry year third year supply	Supply totals	28,638	31,432	33,392	35,406	36,612
	Demand totals	28,988	30,335	32,372	34,703	36,099
	Difference	(350)	1,097	1,020	703	513
	Difference as % of Supply	-1.2%	3.5%	3.1%	2.0%	1.4%
	Difference as % of Demand	-1.2%	3.6%	3.2%	2.0%	1.4%
Includes local source water projects not yet begun.						
OMWD will utilize local sources whenever possible. If there is a shortfall, OMWD will rely on CWA imported water suplies.						

For the multi dry-year reliability analysis, the conservative planning assumption is that MWD will be allocating supplies to its member agencies pursuant to its Water Supply Allocation Plan. By assuming allocations in this reliability assessment, it allows OMWD to analyze how supplies could be utilized and the likelihood of shortages.

Under the specific parameters assumed in the multi dry-year analysis, some level of shortage could potentially be experienced. Shortages occur in the early years primarily because of possible project delays. OMWD also recognizes that some increase in water demands will be due to growth.

CWA has invested in carryover storage supplies to assist in achieving reliability in dry year and multiple dry years, as discussed in Section 9.3 of its UWMP. CWA's carryover storage supply program includes both in-region surface water storage and out-of-region groundwater storage in California's Central Valley. These verifiable dry-year storage supplies are described in detail in Section 11 of CWA's UWMP, and a list of the specific written contracts, agreements, and environmental permits associated with implementation of the carryover storage program are also included.

CWA also successfully acquired and utilized dry-year transfers in 2009, as described in Section 11.2.3.2 of its UWMP. CWA's dry-year transfer program serves as a strategy to meet potential future planning uncertainties in times of shortages, indentified in Section 10 of its UWMP.

In years where shortages may occur after utilization of CWA's carryover storage, additional regional shortage management measures, consistent with CWA's Water Shortage and Drought Response Plan will be taken to fill the supply shortfall. These measures could include extraordinary conservation, achieved through voluntary or mandatory water-use restrictions. OMWD customers reduced water consumption more than 20% during the recent shortage period through aggressive conservation measures and OMWD's rate structure. As discussed in the following section, the amount of savings achieved through extraordinary conservation measures could be limited due to demand hardening, especially following compliance with the Water Conservation Bill of 2009 conservation savings.

Demand Hardening

It should be emphasized that the amount of extraordinary conservation savings expected to be achieved through mandatory measures, such as water-use restrictions, could be less than that experienced in the current and previous shortage periods. This is due to the concept known as demand hardening. Demand hardening diminishes the ability or willingness of a customer to reduce demands during shortages as a result of having implemented long-term conservation measures. Responsiveness to drought pricing and general price increases will diminish because remaining essential uses are less responsive to price. The required reduction levels through the Water Conservation Bill of 2009 compliance have the potential to reduce customer discretionary demands and create less flexibility in the managing of demand during shortages. This would increase the importance of acquiring supplemental dry-year supplies to eliminate or reduce potential supply shortages.

Based on the results of the previous scenario planning process, OMWD can help ensure a long-term reliable water supply through the following measures:

1. Implementation of projects for alternate water sources such as recycled water and brackish groundwater desalination;
2. Compliance with the Water Conservation Bill of 2009 conservation compliance targets and continuation of CUWCC's BMPs;
3. Continue to implement programs and explore additional planned local projects that could strengthen reliability and help manage potential shortfalls in the development of supplies.
4. Conduct annual tracking and reporting on implementation of management strategies identified in this UWMP to take appropriate action if supply alternatives are not developed as planned.

Rate increases as well as a change in rate structure can also increase conservation.

6.2 Water Supply Shortage Assessment Analysis

This section describes OMWD's preparedness to manage water use and supply during periods of water shortage. Two types of shortage are addressed: water supply shortage and emergency. A water supply shortage is a short-term or long-term water shortage that can result from a number of factors and may require mandatory reductions in water supply. An emergency is an acute situation with the potential of a complete interruption of OMWD's supplies.

OMWD's water conservation and water reclamation programs are integral components of its Water Shortage Contingency Plan which, in accordance with CWC § 10632, examines the effects on OMWD of various levels of emergency water shortage, and identifies measures OMWD has implemented to deal with these shortages.

6.2.1 Past Experience

Although water use has grown significantly since 1959, the six-year drought of 1987-92 had significant impacts on how water is used and how water will be used in the future. During the drought, the population of OMWD grew, and the water use declined. The reduction was attributed to two general categories, habit change and hardware. Habit change is the change in the manner in which water is used, such as not letting the water run while doing the dishes. This change may or may not be permanent. Hardware change is using a fixture to change the amount of water used, such as a low flow-showerhead.

In FY 1989-90, OMWD reached the height of its water use up to that point, with a total per capita water use of 326.6 GPCD. The effects of a long-term drought were just being realized and conservation measures were on the verge of being implemented. By FY 1991-92, the drought had peaked and through aggressive water conservation measures, including OMWD's implementation of stage 4 of its Waste Water Ordinance 204, water use had dropped to approximately 230.4 GPCD. This was over a 25 percent reduction of water use from FY 1989-90, and exceeded CWA's request for a 20 percent reduction. Ordinance 204 was rescinded in 2008 and replaced with OMWD's Water Supply Shortage Conservation Ordinance.

The drought of 1987-92 changed the way water managers look at drought situations. Both MWD and CWA have developed elaborate drought management plans to fairly deliver reduced water to its member agencies; and both MWD and CWA are heavily involved in water supply reliability planning. **Table 38** highlights the years used in calculations, **Table 39** shows historical supply reliability based on past experience and **Table 40** projects supply reliability.

Table 38
Basis of water year data

Water Year Type	Base
Average Water Year	2006
Single-Dry Water Year	1989
Multiple-Dry Water Years	1989-1992

Table 39
Supply reliability — historic conditions

Average / Normal Water Year	Single Dry Water Year	Multiple Dry Water Years			
		Year 1	Year 2	Year 3	Year 4
	22,561	23,238	24,632	26,110	27,677
Percent of Average/Normal Year:	100%	103%	109%	116%	123%

Table 40
Supply reliability — current water sources

	Average / Normal Water Year	Multiple Dry Water Year		
		Year 2011	Year 2012	Year 2013
San Diego County Water Authority	22,561	23,238	24,632	26,110
Recycled	3,200	3,200	3,200	3,200
Percent of normal year:	100.0%	103.0%	108.0%	114.0%
Ave/Normal water year used is 2006.				

6.2.2 Recent Experience

The declining Delta ecosystem, aging water infrastructure, increased population, and multi-year water supply shortages continue to put pressure on California's water supply system. A water supply shortage may persist into the foreseeable future. On February 29, 2008, the Governor sent a letter to the legislature that called for a 20% reduction in per capita water use by 2020. The Water Conservation Bill of 2009 was enacted and became effective January 1, 2010. All retail water agencies throughout California are required to comply and to continue the commitment to water conservation over the next ten years to achieve the state's goal of a 20% reduction in statewide urban per capita use by 2020. Additional information and analysis regarding OMWD's compliance with the requirements of the Water Conservation Bill of 2009 is set forth in Chapter 4.

6.3 Water Supply Shortage Measures

OMWD has prepared itself to deal with periods of water supply shortage by adopting in 2008 its Water Supply Shortage Conservation Ordinance, which may be considered a water shortage contingency ordinance. The ordinance provides for progressively severe stages of water use restrictions as necessary to accomplish service area-wide water use reductions of up to and over 40 percent. The ordinance is described below and a copy of the ordinance can be found in **Appendix O**. The ordinance describes the effects that a drought or water supply shortage may have on OMWD's water supply, its water conservation stages, and the implementation, violation, and penalties of the stages.

OMWD incorporated the Regional Drought Response Plan in the development of its ordinance and participated in the cooperative effort between the San Diego County water agencies general managers and CWA in the creation of the Regional Drought Response Plan. Additional discussion regarding CWA's Drought Response Plan can be found in Section 11 of their 2010 UWMP. The following **Tables 41, 42, 43** and **44** outline measures in place to reduce consumer consumption.

Table 41

Water shortage contingency — rationing stages to address water supply shortages

Stage No.	Water Supply Conditions	% Shortage
Level 1 Water Supply Shortage-Watch	A Level 1 condition is also referred to as a "Water Supply Shortage-Watch" condition. A Level 1 condition applies when the Water Authority notifies its member agencies or the Olivenhain Municipal Water District's General Manager determines that due to drought or other supply reductions, there is a reasonable probability that there will be supply shortages and that a consumer demand reduction of up to 10 percent is required in order to ensure that sufficient supplies will be available to meet anticipated demands. The General Manager shall declare the existence of a Water Supply Shortage Level 1 and take action to implement the Level 1 conservation practices identified in the Water Supply Shortage ordinance.	10% Voluntary Restrictions
Level 2 Water Supply Shortage-Alert	A Water Supply Shortage Level 2 condition is also referred to as a "Water Supply Shortage-Alert" condition. A Level 2 condition applies when the Water Authority notifies its member agencies or the Olivenhain Municipal Water District's Board of Directors determines that due to cutbacks caused by drought or other reduction in supplies, a consumer demand reduction of up to 20 percent is required in order to have sufficient supplies available to meet anticipated demands. The Olivenhain Municipal Water District Board of Directors shall declare the existence of a Water Supply Shortage Level 2 condition and implement the mandatory Level 2 conservation measures identified in this ordinance.	20% Mandatory Restrictions
Level 3 Water Supply Shortage-Critical	A Water Supply Shortage Level 3 condition is also referred to as a "Water Supply Shortage-Critical" condition. A Level 3 condition applies when the Water Authority notifies its member agencies or the Olivenhain Municipal Water District's Board of Directors determines that due to increasing cutbacks caused by drought or other reduction of supplies, a consumer demand reduction of up to 40 percent is required in order to have sufficient supplies available to meet anticipated demands. The Olivenhain Municipal Water District Board of Directors shall declare the existence of a Water Supply Shortage Level 3 condition and implement the Level 3 conservation measures identified in this ordinance.	up to 40% Mandatory Restrictions
Level 4 Water Supply Shortage-Emergency	A Drought Response Level 4 condition is also referred to as a "Water Supply Shortage-Emergency" condition. A Level 4 condition may apply when the Water Authority Board of Directors declares a water shortage emergency pursuant to California Water Code section 350 and notifies its member agencies that Level 4 requires a demand reduction of more than 40 percent in order for the Olivenhain Municipal Water District to have maximum supplies available to meet anticipated demands. The Olivenhain Municipal Water District shall declare a Water Supply Shortage Emergency in the manner and on the grounds provided in California Water Code section 350 and Water Code Section 71640 and may do so whether or not the SDCWA declares a California Water Code section 350 emergency.	over 40% Mandatory Restrictions

Level 4 is designed to address a 50 percent reduction in water supply.

Table 42 Water shortage contingency — mandatory prohibitions	
Prohibitions	**Stage When Prohibition Becomes Mandatory**
Stop washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards.	Level 2
Stop water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, stop water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.	Level 2
Irrigate residential and commercial landscape before 8 a.m. and after 6 p.m. only.	Level 2
Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas, including trees and shrubs located on residential and commercial properties that are not irrigated by a landscape irrigation system.	Level 2
Irrigate nursery and commercial grower's products before 10 a.m. and after 6 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.	Level 2
Repair all water leaks within five (5) days of notification by the Olivenhain Municipal Water	Level 2
Water savings of 20 percent are required to protect the health, safety and welfare of the public while meeting the basic needs of OMWD customers.	Level 2
Limit residential and commercial landscape irrigation to no more than three (3) assigned days per week on the schedule established by OMWD's General Manager. This restriction does not apply to commercial or agricultural growers.	Level 2
Limit lawn watering and landscape irrigation sprinkler systems to 10 minutes per watering station per assigned day. Exceptions: "efficient" irrigation systems, including, but not limited to: weather-based controllers, drip/micro-irrigation and stream-rotor sprinkler systems. Residential and commercial landscaped areas including trees and shrubs not irrigated by irrigation systems, on the same schedule as number 1 above by using a bucket, a hand-held hose with a positive shut-off nozzle, or low-volume, non-spray irrigation system.	Level 2
Repair all leaks within 72 hours (3 days) of notification by OMWD, unless alternative arrangements have been authorized by the General Manager.	Level 2
Note: Level 2 restrictions supersede all previous direction provided at lower water supply shortage conditions.	

Levels 3 and 4 of **Table 42** are on the next page.

Table 42 Water shortage contingency — mandatory prohibitions	
Prohibitions	**Stage When Prohibition Becomes Mandatory**
Stop washing all vehicles except at commercial car washing facilities that use recycled water or high-pressure/low volume wash systems.	Level 3
Repair all leaks with-in 48 hours (2 days) of notification by OMWD, unless alternative arrangements have been authorized by the General Manager.	Level 3
OMWD may establish a property water allocation, taking care not to penalize customers that have implemented water conservation methods or have installed water-saving devices. Customers will be notified in their regular billing statement of their water allocation and the effective date for compliance. Customers using more than their allocation will be subject to a penalty, ranging from two to four (2-4) times the Metropolitan Tier 2 rate.	Level 3
Note: Level 3 restrictions supersede all previous direction provided at lower levels of water supply shortage.	Level 3
During a Level 4 Water Supply Shortage, water conservation measures are MANDATORY and water savings of more than 40 percent are required to protect the health, safety and welfare of the public while meeting the basic needs of OMWD customers.	Level 4
At Level 4, all of the Level 1, 2 and 3 water conservation measures apply, with these additional mandatory restrictions:	Level 4
Stop all residential and commercial landscape irrigation, with the following exceptions: Crops and landscape products of commercial growers and nurseries. Residential and commercial landscaped areas including trees and shrubs not irrigated by irrigation systems, on the same schedule as number 1 above by using a bucket, a hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation system. Maintenance of existing landscape necessary for fire protection as determined by the Fire Marshal of the fire protection agency that is jurisdictionally and legally responsible for the property in question. Maintenance of existing landscaping for erosion control. Maintenance of plants that are identified as rare or essential to rare animals. Maintenance of landscaping in public parks, playing fields, day care centers, school grounds, cemeteries, and golf course greens. Watering no more than two (2) days per week per the schedule outlined under Level 3 Water Supply Shortage above. Watering of livestock. Public works projects and irrigation necessary to maintain active environmental mitigation projects.	Level 4
Repair all leaks within twenty-four hours (1 day) of notification by OMWD, unless alternative arrangements have been authorized by the General Manager.	Level 4
Note: Level 4 restrictions supersede all previous direction provided at lower levels of water supply shortage outlined above.	Level 4
OMWD may establish a property water allocation taking care not to penalize customers that have implemented water conservation methods or have installed water saving devices. Customers will be notified in their regular billing statement of their water allocation and the effective date for compliance. Customers using more than their allocation will be subject to a penalty, ranging from two to four (2-4) times the Metropolitan Tier 2 rate.	Level 4

Table 43 contains consumption reduction methods.

Table 43		
Consumption Reduction Methods	**Stage When Method Takes Effect**	**Projected Reduction (%)**
Voluntary Restriction - Stop washing down paved surfaces, including but not limited to sidewalks, driveways, parking lots, tennis courts, or patios, except when it is necessary to alleviate safety or sanitation hazards.	Level 1	Up to 10%
Voluntary Restriction - Stop water waste resulting from inefficient landscape irrigation, such as runoff, low head drainage, or overspray, etc. Similarly, stop water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.	Level 1	Up to 10%
Irrigate residential and commercial landscape before 8 a.m. and after 6 p.m. only.	Level 1	Up to 10%
Voluntary Restriction - Use a hand-held hose equipped with a positive shut-off nozzle or bucket to water landscaped areas, including trees and shrubs located on residential and commercial properties that are not irrigated by a landscape irrigation system.	Level 1	Up to 10%
Voluntary Restriction - Irrigate nursery and commercial grower's products before 10 a.m. and after 6 p.m. only. Watering is permitted at any time with a hand-held hose equipped with a positive shut-off nozzle, a bucket, or when a drip/micro-irrigation system/equipment is used. Irrigation of nursery propagation beds is permitted at any time. Watering of livestock is permitted at any time.	Level 1	Up to 10%
Voluntary Restriction - Repair all water leaks within five (5) days of notification by the Olivenhain Municipal Water District unless other arrangements are made with the General Manager.	Level 1	Up to 10%
All the restrictions listed in Level 1 become mandatory. All following restrictions will be mandatory.	Level 2	Up to 20%
Limit residential and commercial landscape irrigation to no more than three (3) assigned days per week on the schedule established by OMWD's General Manager. This restriction does not apply to commercial or agricultural growers.	Level 2	Up to 20%
Limit lawn watering and landscape irrigation sprinkler systems to 10 minutes per watering station per assigned day. Exceptions: "efficient" irrigation systems, including, but not limited to: weather-based controllers, drip/micro-irrigation and stream-rotor sprinkler systems. Residential and commercial landscaped areas including trees and shrubs not irrigated by irrigation systems, on the same schedule as number 1 above by using a bucket, a hand-held hose with a positive shut-off nozzle, or low-volume, non-spray irrigation system.	Level 2	Up to 20%
Rate Structure - Move to Level 2.	Level 2	Up to 20%
Repair all leaks within 72 hours (3 days) of notification by OMWD, unless alternative arrangements have been authorized by the General Manager.	Level 2	Up to 20%

Table 43 is continued on the following page.

Table 43		
Consumption Reduction Methods	**Stage When Method Takes Effect**	**Projected Reduction (%)**
Residential and commercial landscaped areas including trees and shrubs not irrigated by irrigation systems, on the same schedule as number 1 above by using a bucket, a hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation system.	Level 3	Up to 40%
Stop filling and/or refilling all ornamental lakes or ponds unless it is necessary to sustain valuable aquatic life that were managed in the lake or pond prior to declaration of a Level 3 Water Supply Shortage.	Level 3	Up to 40%
Stop washing all vehicles except at commercial car washing facilities that use recycled water or high-pressure/low volume wash systems.	Level 3	Up to 40%
Rate Structure - Move to Level 3.	Level 3	Up to 40%
Repair all leaks with-in 48 hours (2 days) of notification by OMWD, unless alternative arrangements have been authorized by the General Manager.	Level 3	Up to 40%
At Level 4, Level 1, 2 and 3 water conservation measures apply, with the following mandatory restrictions. Stop all residential and commercial landscape irrigation, with the following exceptions: - Crops and landscape products of commercial growers and nurseries. - Residential and commercial landscaped areas including trees and shrubs not irrigated by irrigation systems, on the same schedule as number 1 above by using a bucket, a hand-held hose with a positive shut-off nozzle, or low-volume non-spray irrigation system. - Maintenance of existing landscape necessary for fire protection as determined by the Fire Marshal of the fire protection agency that is jurisdictionally and legally responsible for the property in question. - Maintenance of existing landscaping for erosion control. - Maintenance of plants that are identified as rare or essential to rare animals. - Maintenance of landscaping in public parks, playing fields, day care centers, school grounds, cemeteries, and golf course greens. Watering no more than two (2) days per week per the schedule outlined under Level 3 Water Supply Shortage. - Watering of livestock. - Public works projects and irrigation necessary to maintain active environmental mitigation projects.	Level 4	More than 40%
Repair all leaks within twenty-four hours (1 day) of notification by OMWD, unless alternative arrangements have been authorized by the General Manager.	Level 4	More than 40%
OMWD may establish a property water allocation taking care not to penalize customers that have implemented water conservation methods or have installed water saving devices. Customers will be notified in their regular billing statement of their water allocation and the effective date for compliance. Customers using more than their allocation will be subject to a penalty, ranging from two to four (2-4) times the Metropolitan Tier 2 rate.	Level 4	More than 40%
Rate Structure - Move to Level 4.	Level 4	More than 40%
At any level, OMWD staff may contact large water users by letter, email or phone call to request reduction in use.	Levels 1-4	Temporary/Emereg ncy - more than 40% depending on need.

Table 44 on the next page lists penalties and charges associated with a water shortage contingency.

Table 44 Water shortage contingency — penalties and charges	
Penalties or Charges	**Stage When Penalty Takes Effect**
Penalty for excess use	
Charge for excess use	
Customers who do not comply with mandatory conservation measures may be prosecuted and face imprisonment, a fine of up to $1,000 and, in extreme cases, having a flow-restricting device placed on their connection or having the water service disconnected.	Level 1
Drought Rate Structure may be implemented.	Level 1
Customers who do not comply with mandatory conservation measures may be prosecuted and face imprisonment, a fine of up to $1,000 and, in extreme cases, having a flow-restricting device placed on their connection or having the water service disconnected.	Level 2
Drought Rate Structure may be implemented.	Level 2
Customers who do not comply with mandatory conservation measures may be prosecuted and face imprisonment, a fine of up to $1,000 and, in extreme cases, having a flow-restricting device placed on their connection or having the water service disconnected.	Level 3
OMWD may establish a property water allocation, taking care not to penalize customers that have implemented water conservation methods or have installed water-saving devices. Customers will be notified in their regular billing statement of their water allocation and the effective date for compliance. Customers using more than their allocation will be subject to a penalty, ranging from two to four (2-4) times the Metropolitan Tier 2 rate.	Level 3
Drought Rate Structure will be implemented.	Level 3
Customers who do not comply with mandatory conservation measures may be prosecuted and face imprisonment, a fine of up to $1,000 and, in extreme cases, having a flow-restricting device placed on their connection or having the water service disconnected.	Level 4
Drought Rate Structure will be implemented.	Level 4
OMWD may establish a property water allocation, taking care not to penalize customers that have implemented water conservation methods or have installed water-saving devices. Customers will be notified in their regular billing statement of their water allocation and the effective date for compliance. Customers using more than their allocation will be subject to a penalty, ranging from two to four (2-4) times the Metropolitan Tier 2 rate.	Level 4
OMWD is not required to comply with state Proposition 218 to impose fines upon customers who fail to comply with the Water Supply Shortgage Conservation Ordinance and use water in violation of OMWD water use restrictions.	Level 4
Violations and Penalties Any person, who uses, causes to be used, or permits the use of water in violation of this ordinance is guilty of an offense punishable as provided herein. Each day that a violation of this ordinance occurs is a separate offense. Administrative fines may be levied for each violation of a provision of this ordinance as follows: A warning will be issued at the sole discretion of the General Manager for the first violation. The customer will be fined one hundred dollars for a second violation. The customer will be fined two hundred dollars for a third violation of any provision of this ordinance within one year. The customer will be fined five hundred dollars for each additional violation of this ordinance within one year. Any violation of a provision of this ordinance is subject to enforcement through installation of a flow-restricting device in the meter. Each violation of this ordinance may be prosecuted as a misdemeanor punishable by imprisonment in the county jail for not more than thirty (30) days or by a fine not exceeding $1,000, or by both as provided in Water Code section 377. Willful violations of the mandatory conservation measures and water use restrictions as set forth in Section 7.0 and applicable during a Level 4 Water Supply Shortage may be enforced by discontinuing service to the property at which the violation occurs as provided by Water Code section 356. All remedies provided for herein shall be cumulative and not exclusive.	Levels 2-4

During a water supply shortage, such as a drought or emergency shortage, OMWD monitors production and distribution records daily and will increase public outreach. All meters in OMWD have been installed within the last ten years and are read through an automated meter reading system. OMWD has also implemented a monthly exception report for high water use as a tool to detect customer water leaks. Short-term changes in pumping, flow rates, or reservoir levels are shown through OMWD's SCADA system and the system is constantly monitored.

6.4 Worst Case Drought/Water Supply Shortage

OMWD produced, in conjunction with CWA, an Emergency Disaster Manual. The manual covers various types of disasters and the steps to take in the event one occurs. It addresses types of disasters that might occur, problems that may occur, communication, resource contacts, and an emergency action plan.

OMWD revised its Emergency Response Plan (ERP) in 2008. The new plan covers the needs and concerns to be handled within OMWD's service area, as well as procedures and agreements in relation to adjacent water districts. This emergency plan is reviewed annually and updated as necessary. Some of the procedures addressed in the plan include:

- Guidelines for assessing the status of water service needs within OMWD's service area and in relation to adjacent water districts.
- Established liaisons with other agencies and contact information.
- Designated positions and typical duties for Emergency Operations Center staff.
- Templates for emergency communication with OMWD customers.
- The process for coordination with other agencies in initiating mutual aid.
- The transfer and tracking of resources, personnel, equipment, or supplies, to or from adjacent public works, emergency agencies, or districts.

In addition, the OMWD safety office maintains several informal agreements for mutual aid and assistance through WUSMA (Water Utility Safety Manager Association) and WAEC (Water Agency Emergency Cooperative) networking groups. Though informal in nature, these agreements have been beneficial during past emergencies.

OMWD completed a comprehensive Vulnerability Assessment in 2003 and a Major Hazard Mitigation Plan in 2005 that are reviewed and updated as necessary.

6.4.1 Major Facility Failure

An earthquake, regional power outage, fire, flood or other emergency situation could result in an emergency interruption of OMWD's water supply from CWA. In this event, OMWD would manage the situation utilizing National Incident Management System (NIMS) procedures as called out in its ERP. The projected duration and severity of the outage would be assessed and an appropriate response developed and communicated to the public and governmental agencies as called out in the ERP.

OMWD maintains several back-up generators at critical areas of the water system to maintain water delivery capability.

OMWD's storage facilities would provide some level of emergency supply. The duration of supply available from storage would depend upon the elapsed time between the emergency and the full implementation of the rationing, the availability of water transfers from adjacent districts, and the percent of reduction in water use by OMWD customers. OMWD's current total tank usable storage capacity is over 80 million gallons and typically operates between 50 and 55 MG. In an average year at current development levels OMWD has an average daily demand of 17.5 MGD. In addition, OMWD's rights to 3,443 AF of emergency capacity in CWA's system

provide OMWD with the ability to serve its customers for periods of over 60 days. More on CWA's Emergency Storage Project can be found in **Appendix F**, Section 11.

OMWD has established cooperative agreements with its adjacent water agencies for the emergency exchange and transportation of water. OMWD borders six other water agencies: City of San Diego, San Dieguito WD, Santa Fe ID, Carlsbad MWD, Vallecitos WD, and Rincon Del Diablo MWD. Of these six, OMWD has emergency connections and agreements with four: San Dieguito WD, Santa Fe ID, Carlsbad MWD, and Vallecitos WD. The agreements describe the number, location, type of connection, and the agreed rate of flow.

During periods of emergency outage of OMWD's water supply from CWA, such as in a major earthquake, OMWD can draw on 3,443 AF of water storage from CWA's Emergency Storage Project, water available via interconnections with its neighboring retail water agencies, and reductions in demand via its Water Supply Shortage Conservation Ordinance to attempt to manage water supply and demand conditions. OMWD will continue to research the possibility of adding additional storage facilities to provide OMWD increased reliability during an emergency.

Although OMWD anticipates being able to meet demands, there are factors that can threaten the consistency of supply as discussed earlier.

6.5 Financial Considerations

This section discusses OMWD's preparedness to manage its finances during periods when water sales to customers are reduced by a water supply shortage and increased conservation measures. OMWD's water supply shortage rate structure is designed to be consistent with OMWD water supply shortage response conservation program to dampen OMWD's financial impact in a declining sales situation.

OMWD's financial goal as a public agency is to be revenue-neutral; that is, to maintain revenues equal to costs and budgeted expenses, and maintain adequate reserves for economic uncertainties of changes in water sales and costs. OMWD's base (normal) and water supply shortage rates are developed based on the historical financial trend and water demand average of demand.

OMWD has its rate stabilization fund reserve to mitigate the risk of large unexpected rate increases that are more difficult for its customers to manage, plan, and budget for. Water sales generate over 70% of OMWD's revenue requirements to sustain operations. Fluctuations in demand will dramatically impact OMWD's financial stability.

6.5.1 Water Rates

OMWD charges its customers for water under an increasing block rate structure, in which the unit price of water increases as the volume used by each customer goes up. The lowest tier for residential users is a lifeline, typically for basic human consumptions and rate in this tier is set as a much lower rate than the other tiers for conservation. The highest tier is typically consumed for outdoor use and/or irrigation.

OMWD residential rate uses a tiered water rate structure based on volume use. Meter sizes are assigned in terms of equivalent dwelling units (EDU), where one EDU represents a

single-family residence with a typical 3/4-inch meter and a maximum flow capacity of 27 gallons per minute. Water revenues are collected from commodity rates and monthly system access fees. About 75% of OMWD's water sales are collected from commodity revenue. OMWD adopted an inclining block structure for collecting water user fees based on monthly consumption and to promote water conservation.

OMWD's rate structure was also designed to ensure users pay a proportionate share of costs. Residential/Domestic users have a rate structure based on volume use in blocks that are priced at a rate ranging from $1.95 to $3.49 per 748 gallons. For commercial and industrial customers, OMWD implemented a tiered rate structure based on meter capacity, adjusted seasonally to promote conservation. Tier break points for commercial/irrigation customers were established based on meter size and set in both winter and summer seasons, based on water use during each season because commercial/irrigation customers are on a seasonal schedule. It is anticipated that greater conservation efforts will also enhance revenue stability.

For agricultural users, OMWD implemented a uniform rate for simplicity.

A system access charge is a cost recovery mechanism that is generally included in the rate structure to pay for wholesaler fixed charges, customer service billing, and meter costs and other operations and maintenance costs, such as debt service. Due to fluctuations in water sales which are driven predominately by variation in weather conditions and uncontrollable state and federal mandates, OMWD needs to recover a portion of its revenue stability. It is an OMWD goal to not exceed 30% of its revenue requirements in collecting revenues from fixed charges. OMWD has three outstanding bonds that were issued for water infrastructure and improvements and the water system revenue is a pledge to pay those fixed costs. The current OMWD Rates and Rules Brochure which includes the rate structure as of April 1, 2011 is included as **Appendix P**.

6.5.2 Effects on Overall Sales

OMWD's annual revenue requirement to be collected from rates and charges was developed based on historical average of water sales with staff projected growth. If water supply shortage conditions occur, OMWD's ability to recover its costs of service, including fixed wholesale costs, from water sales will be impacted depending upon the severity of water reductions. In order to mitigate this risk, OMWD adopted the Revenue Policy in which the Board of Directors set the goal to collect at least 50% of OMWD's revenue requirement from low indoor water use and monthly fixed charges and utilize OMWD's rate stabilization fund to cover costs when water sales are lower than expected due to drought and revenues are not sufficient to pay for expenditures.

When water sales are lower than expected, due to prolonged dry weather conditions or a wet winter, and revenues are not sufficient to pay for the expenditures, these reserve funds are used to offset the need to a higher rate increase due to the drop in sales. However, if the reserves fall below the Board-established minimum goal of 25% of net estimated water sales, a rate increase may be necessary.

Chapter 7

Demand Management Measures

DMMs are mechanisms a water supplier implements to increase water conservation. Suppliers must provide a description for each DMM listed in the UWMP Act that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measure (CWC § 10631(f)). In addition, suppliers are required to provide an evaluation for each DMM that is not currently being implemented or scheduled for implementation, which may include showing that one or more particular DMMs are not locally cost effective for the agency to implement (CWC §§ 10631(g), 10631.5). The DMMs listed in the Act correspond to the 14 BMPs listed and described in the CUWCC MOU. CUWCC members have the option of submitting their annual reports in lieu of describing the DMMs in their UWMP in accordance with CWC § 10631(f)-(g) (CWC § 10631(j)). The DWR Guidebook confirms this option by stating that an urban water supplier's UWMP is to document its DMM implementation by either providing the information required by the Act for each DMM, or submitting a copy of its 2009-2010 approved CUWCC BMP report if the supplier is a signatory to the CUWCC MOU. OMWD is a signatory member of the CUWCC. Thus, according to the DWR Guidebook, OMWD can self-certify its full compliance with the CUWCC MOU, as follows: "For this purpose, a supplier will self-certify full compliance by supplying all the data required for documenting BMP, Flex Track Menu, or gallons per capita per day (GPCD) consumptions implementation. The supplier will also include documentation that coverage level for each BMP or equivalent program has been met. This documentation is to be included as part of the plan when it is released for public review and as adopted by the board" (DWR Guidebook E-6). OMWD self-certifies that it is in compliance with the CUWCC's BMPs and has included the CUWCC accepted coverage report as **Appendix Q**.

OMWD has been active in the development and implementation of water use efficiency programs and water conservation measures, including those programs administered by CWA and MWD. As an original signatory to the CUWCC MOU, OMWD also demonstrates generally accepted, cost-effective, environmentally and socially acceptable water conservation planning and implementation. Through the cooperative efforts of OMWD, CWA, and MWD, all of the BMP measures are now being implemented within OMWD's service area. The complete MOU is included in **Appendix R**.

The origins of the CUWCC and the MOU were such that during the course of the State Water Board's "Bay-Delta Proceedings" in the late 1980s and early 1990s, major urban and environmental interests worked cooperatively to develop a mutually accepted approach to the evaluation and implementation of urban water conservation measures. The result of this work was the statewide MOU on water conservation, BMPs, and the creation of the CUWCC to monitor and administer implementation of BMPs throughout the state. OMWD took part in this historic event.

7.1 "Best Management Practices" and the California Water Ethic

The development of the water conservation BMP and the CUWCC assisted urban water agencies by streamlining the evaluation of water conservation measures. Perhaps more important, however, is the contribution that the BMP agreement has made to the development of a California Water Ethic.

The California Water Ethic recognizes the responsibility of water users to make the reasonable and best use of their existing water supplies before developing new ones. In the case of urban water

users, this has meant the more aggressive implementation of water conservation, water reclamation, and groundwater management programs.

By demonstrating on a statewide basis their commitment to efficient use and careful management of existing supplies, urban water agencies have had increased success in their ability to gain political and regulatory approvals for the development of water transfers and other water supply projects. In this sense, the continued aggressive development of water conservation and water management measures by urban water agencies can be considered a prerequisite to new water transfers from Central Valley agriculture and to new solutions to the continuing water supply and environmental problems in the Sacramento-San Joaquin Bay-Delta.

7.2 California Urban Water Conservation Council

As recognized by the DWR Guidebook, the CUWCC BMP MOU:

- Expedites implementation of reasonable water conservation measures in urban areas and
- Establishes assumptions for use in calculating estimates of reliable future water conservation savings resulting from proven and reasonable conservation measures.

The MOU was first prepared in 1991 and has been frequently updated, most recently in June 2010. The MOU identifies 14 water conservation BMPs that a water supplier can document as being implemented or as planned to be implemented. Water suppliers provide this documentation to the CUWCC every two years. More information about the BMP MOU is available at the CUWCC website: http://www.cuwcc.org/bmps.aspx.

7.2.1 Criteria for Evaluating Conservation Measures

A water conservation measure is considered cost-effective if the present value of the benefits exceeds the present value of the costs.

Total benefits exclude financial incentives received by water suppliers or by retail customers. These benefits include:

a. avoided capital costs of production, transport, storage, treatment, wastewater treatment and distribution capacity.
b. avoided operating costs, including but not limited to, energy and labor.
c. environmental benefits and avoided environmental costs.
d. avoided costs to other water suppliers, including those associated with making surplus water available to other suppliers.
e. benefits to retail customers, including benefits to customers of other suppliers associated with making surplus water available to these suppliers.

Total program costs are those costs associated with the planning, design, and implementation of the particular BMP, excluding financial incentives paid either to other water suppliers or to retail customers. These costs include:

a. capital expenditures for equipment or conservation devices.
b. operating expenses for staff or contractors to plan, design, or implement the program.
c. costs to other water suppliers.

d. costs to the environment.
e. costs to retail customers.

7.2.2 Marginal Cost of Supply

OMWD currently purchases all of its treated potable water, both potable and raw, from CWA via MWD. Even as water recycling, groundwater, desalination, and other local projects come on line in future years, OMWD's purchases of CWA water will continue to increase. OMWD's marginal cost of supply is its cost of purchasing an additional unit of CWA water, as well as the cost of CWA's treatment surcharge for treated water.

CWA treatment surcharge is $207 per acre foot. Raw water is purchased for $459/AF. Water treated at the DCMWTP costs OMWD $161/AF.

The marginal cost of supply is significant to an evaluation of water conservation and alternative supply sources because it provides a useful economic benchmark. If OMWD can implement a conservation or alternative supply measure for less than its marginal cost of supply, then it reduces the overall costs of meeting its customers' water needs, and from a broad economic perspective the measure can be said to be cost-effective. Specifically, when faced with a new increment of growing water demand, OMWD can bring supplies into balance with demands either by purchasing more supply from CWA (at $666/AF), or by implementing further conservation measures to reduce demands. If the later approach can be achieved for a unit cost of less than $666/AF, then OMWD has reduced its total costs and reliance upon purchasing water from CWA.

In looking at the economic and financial implications to OMWD of implementing water conservation programs, it is important to recognize that the ledger sheet has two sides: 1) costs, and 2) revenues. Although conservation is properly labeled as cost-effective when it reduces a district's costs, the implementing district must also grapple with a potential reduction in revenues that results if conservation-induced reductions in water sales are not offset by rate adjustments. This effect is illustrated in the following discussion.

7.3 Water Conservation Programs' Effects on Water Bills

The economics of water conservation sometimes become contentious when the focus is placed on water rates instead of on water bills. Because water conservation measures are designed to reduce water sales, some increase in rates may be necessary to balance revenues with costs. However, water conservation measures are by definition cost-effective when they reduce OMWD's total cost of meeting the water needs of its customers, and thereby **reduce the average customer's water bill**.

A hypothetical example of the effect of cost-effective conservation on an average water bill is shown on the next page. In the example, water conservation measures have reduced average customer water use by 10 percent. In order to fund these measures and to balance revenues with costs, OMWD has implemented a 4 percent rate increase. The net effect is to reduce the average water bill by approximately 8 percent.

Effect of Conservation on Monthly Water Bill			
	Water Use (100 cu. ft.)	**Water Rate**	**Total Bill**
Without Conservation	20	$1.95 (0-6 units) $3.00 (7-43 units)	$53.70
With Conservation	18	$1.95 (0-6 units) $3.14 (7-43 units)	$49.38
Percent Change	-10%	+4%	**-8%**
* Commodity Charge only; excludes fixed meter charges.			

An outside observer could conclude that this 4 percent rate increase is an undesirable and possibly unacceptable result of water conservation. When in fact, what is occurring is that the customer is now paying 8 percent less in total, while continuing to use showers, clothes washers, toilets, and landscapes just as before. But now, as a result of conservation measures, each of these uses is consuming less water. The customer gets the same utility benefits from his/her water use, but does so with less water and at a lower monthly cost.

7.4 Wastewater and Energy Cost Savings

Utilities other than OMWD may also benefit from cost-effective water conservation measures. Local wastewater districts may benefit from reduced hydraulic loading on their facilities, and the local electric and gas utilities may benefit from reduced energy demand for water heating and less pumping of water to the region. Because these potential cost savings do not accrue directly to OMWD, cooperative arrangements are necessary in order to allow these benefits to be factored into the economic evaluation of conservation programs.

A water conservation-induced reduction in hydraulic loading could benefit local wastewater plants by relieving stress on existing hydraulically overloaded outfalls and treatment plants, or by allowing for the deferment of capacity expansion projects. Wastewater plants should benefit from reduced operating costs and energy savings from smaller volumes of wastewater requiring treatment. The value of these potential benefits is currently unknown, although they do figure into OMWD planning efforts described in the Water Recycling section of this UWMP.

OMWD looks to manage all resources more efficiently. Of special note is a recent change in energy sources. OMWD‘s electrical accounts now receive 100% renewable energy via a power purchase contract with 3 Phases Renewables. Its power is generated through wind, solar, and biomass technology and fed into the grid for OMWD rather than through more traditional sources such as coal plants as with San Diego Gas and Electric.

7.5 Cost Savings by Wholesale Water Suppliers

As explained previously, OMWD purchases imported water from CWA, which in turn purchases its water from MWD. Both CWA and MWD also benefit from water conservation in OMWD. CWA benefits from water conservation by being able to delay or reduce the size of large new water delivery

facilities necessary to meet the needs of the county's growing population. MWD likewise benefits by not having to develop as much new water supply, and by being able to delay or reduce the size of large new water delivery facilities.

MWD passes its cost savings on to its member agencies through financial assistance to its members. CWA has worked closely with its member agencies to utilize MWD funds as efficiently as possible, through its Cooperative Communications Program. This program splits the costs of approved conservation programs between MWD, CWA, and CWA member agencies.

CWA assists member agencies by providing for a joint participation in the following conservation programs: water budgets, artificial turf, landscape audits, public information and education, school education, and residential, commercial, industrial, and institutional water saving-devices.

7.6 Water Use Efficiency and Water Conservation Activities

The following section contains the management strategies for active and passive water conservation being implemented, planned, or studied. Active water conservation management strategies include participation in CWA's and MWD's regional programs, OMWD's operational water and energy programs, and incentives to businesses and property owners developed and administered by OMWD.

Passive water conservation management strategies include programs that encourage long-term behavior change towards measurable reductions in outdoor water use; increase the landscape industry's basic knowledge regarding the interdependency between water efficiency design, irrigation design, and maintenance; and encourage participation on statewide, national, and industrial committees to advance behavior-based conservation strategies. Additional passive programs and policies include outreach activities, plumbing code changes, legislation, and conservation-based rate structures.

The use of these active and passive water conservation measures, programs, and policies will facilitate market transformation and promote the behavioral change that is fundamental for long-term conservation planning. Chapter 5 on water sources includes discussion of the role that recycled water and other alternate sources play in helping OMWD achieve the water use reductions required under the Water Conservation Bill of 2009.

7.6.1 Implemented Best Management Practices

OMWD has implemented the following BMPs and language describing the BMPs was drawn directly from the CUWCC MOU.

<u>Foundational BMPs:</u>

Utility Operations Programs

Conservation Coordinator - Staff and maintain the position of trained conservation coordinator, or equivalent consulting support, and provide that function with the necessary resources to implement BMPs.

Water waste prevention - Water agency shall do one or more of the following:

a. Enact and enforce an ordinance or establish terms of service that prohibit water waste
b. Enact and enforce an ordinance or establish terms of service for water efficient design in new development

c. Support legislation or regulations that prohibit water waste
d. Enact an ordinance or establish terms of service to facilitate implementation of water shortage response measures
e. Support local ordinances that prohibit water waste
f. Support local ordinances that establish permits requirements for water efficient design in new development.

Water Loss

1) Standard Water Audit and Water Balance - All agencies shall quantify their current volume of apparent and real water loss. Agencies shall complete the standard water audit and balance using the AWWA Water Loss software to determine their current volume of apparent and real water loss and the cost impact of these losses on utility operations at no less than annual intervals.
2) Validation - Agencies may use up to four years to develop a validated data set for all entries of their water audit and balance. Data validation shall follow the methods suggested by the AWWA Software to improve the accuracy of the quantities for real and apparent losses.
3) Economic Values - For purposes of this BMP, the economic value of real loss recovery is based upon the agency's avoided cost of water as calculated by the CUWCC's adopted Avoided Cost Model or other agency model consistent with the CUWCC's Avoided Cost Model.
4) Component Analysis - A component analysis is required at least once every four years and is defined as a means to analyze apparent and real losses and their causes by quantity and type. The goal is to identify volumes of water loss, the cause of the water loss and the value of the water loss for each component. The component analysis model then provides information needed to support the economic analysis and selection of intervention tools. An example is the Breaks and Background Estimates Model (BABE) which segregates leakage into three components: background losses, reported leaks and unreported leaks.
5) Interventions - Agencies shall reduce real losses to the extent cost-effective. Agencies are encouraged to refer to the AWWA's 3rd Edition M36 Publication, Water Audits and Loss Control Programs (2009) for specific methods to reduce system losses.
6) Customer Leaks - Agencies shall advise customers whenever it appears possible that leaks exist on the customer's side of the meter.
7) Metering with Commodity Rates - 100% of existing unmetered accounts to be metered and billed by volume of use within above specified time periods. Service lines dedicated to fire suppression systems are exempt from this requirement.

Conservation Pricing - Conservation pricing requires volumetric rates. While this BMP defines a minimum percentage of water sales revenue from volumetric rates, the goal of this BMP is to recover the maximum amount of water sales revenue from volumetric rates that is consistent with utility costs, financial stability, revenue sufficiency, and customer equity. In addition to volumetric rates, conservation pricing may also include one or more of the following other charges:

1) Service connection charges designed to recover the separable costs of adding new customers to the water distribution system.
2) Monthly or bimonthly meter/service charges to recover costs unrelated to the volume of water delivered or new service connections and to ensure system revenue sufficiency.

3) Special rates and charges for temporary service, fire protection service, and other irregular services provided by the utility.

Public Information and Education Programs

Agencies shall maintain an active public information program to promote and educate customers about water use efficiency. At minimum a public information program shall consist of the following components:

1) Contacts with the public (minimum = 4 times per year).
2) Water supplier contacts with media (minimum = 4 times per year).
3) An actively maintained website that is updated regularly (minimum = 4 times per year).
4) Description of materials used to meet minimum requirement.
5) Annual budget for public outreach program.
6) Description of all other outreach programs

Agencies shall maintain an active school education program to educate students in the agency's service area about water conservation and efficient water use. An agency may participate in a mutual arrangement as described in Section A. At minimum a school information program shall consist of the following:

1) Curriculum materials developed and/or provided by agency (including confirmation that materials meet state education framework requirements and are grade-level appropriate).
2) Materials distributed to K-6 students. When possible, school education programs will reach grades 7-12 as well.
3) Description of materials used to meet minimum requirement.
4) Annual budget for school education program.
5) Description of all other water supplier education programs (Lists follow in Section D).

Programmatic BMPs:

Residential

1) Provide leak detection assistance.
2) Provide Home Landscape Water Use Evaluations.
3) Offer Incentives for high efficiency clothes washers.
4) Provide incentives for WaterSense Specification (WSS) toilets.
5) Provide incentives for WaterSense Specifications for new residential development.

Commercial, Industrial, and Institutional

Implement measures to achieve the water savings goal for CII accounts of 10% of the baseline water use over a 10-year period. Baseline water use is defined as the water consumed by CII accounts in the agency's service area in 2008.

Landscape

1) ETo-based water use budgets developed for 90% of CII accounts with dedicated irrigation meters at an average rate of 9% per year over 10 years.
2) Offer site-specific technical assistance annually to all accounts that are 20% over budget within six years of the date implementation was to commence.
3) Complete irrigation water use surveys for not less than 15% of CII accounts with mixed-use meters and un-metered accounts within 10 years of the date implementation is to commence.
4) Agency will implement and maintain a customer incentive program for irrigation equipment retrofits.

Specific OMWD activities are included in the CUWCC annual BMP reports and self-certification forms developed by the CUWCC included as **Appendix R**.

As the regional wholesale supplier of water to San Diego County, CWA coordinates many of the region's activities and programs to save water. CWA works with member agencies like OMWD to implement water conservation programs, including the installation of hundreds of thousands of water-saving devices throughout San Diego County, development of a landscape auditor internship program, and development of a water budget software tool. The region's programs and activities are funded by multiple sources, including CWA's customer service charge, MWD's water stewardship charge, individual retail member agency charges, and grant funding.

With the active cooperation of the public and businesses, the region's water-providers are instilling a water conservation ethic in San Diego County. CWA's member agencies, whose direct contact with their retail customers is crucial to implementing conservation programs, partner with CWA and take a proactive approach to educate and work with their customers to save water. Since 1991, over 656,000 AF of water has been conserved through the region's conservation programs, including 65,000 AF in 2010. Water conservation measures, programs, and policies are continually evaluated based on current conditions and adjusted accordingly to support member agency water conservation efforts. Regional program descriptions are included in CWA's 2010 UWMP beginning in Section 3.4. (See **Appendix G**.)

7.6.2 Financial Incentives for Customers

OMWD does not provide its customers with direct financial incentives for implementing conservation measures. OMWD does provide incentives for customers to conserve water through its water rate structure. The existing water rates are separated into three tiers for promoting revenue stability, simplicity and conservation. OMWD's rate structure was designed to encourage conservation through efficient usage and send the proper "price signal" to the customers about commodity use.

7.7 Work Groups and Associations

Water Conservation Summits

Three Water Conservation Summits (2006, 2007, and 2009) were held by CWA to bring regional water and land use agencies and urban landscape stakeholders together to shape the future of water conservation in the region, outline the actions needed to change the conservation ethic, and demonstrate how to implement water conservation programs. OMWD was instrumental in the coordination of the 2006 and 2007 summits which developed the foundation for future summits.

Conservation Action Committee

The Conservation Action Committee (CAC) was created by the City of San Diego as a forum to communicate with the landscape industry and property and community managers on issues related to water efficiency. In 2006, the Water Conservation Summit expanded the CAC's purpose to include the following:

- Encourage industries, government, and communities to conserve water and develop tools, programs, and systems to promote water efficiency in the San Diego region.
- Provide a forum to exchange information regarding water efficiency.
- Promote working together for long-term solutions and success.

OMWD was a founding member of the CAC, has participated on various subcommittees, and is the Co-Chair of the Regulation and Legislation Subcommittee.

San Diego Botanic Garden

The San Diego Botanic Garden is a well-established garden in the north-coastal area of San Diego County. For the past few years, OMWD supported the Botanic Garden as a corporate partner. In addition, OMWD and the Botanic Garden collaborated on the development of garden and school education programs as well as landscape workshops for adults. An important goal in the mission of the Botanic Garden is to promote sustainable use of natural resources. Low-water-use plants and water-saving technologies and displays make up the majority of the garden. The Botanic Garden also provides its own classes on water conservation–related subjects throughout the year in an effort to reduce outdoor water use in the region.

Outreach

OMWD used consultants to assist in public outreach efforts such as educating customers about water supply shortages and revising its website text and structure to an easily maneuvered, clear and concise format.

OMWD has an active speakers bureau that delivers presentations, facilitates discussions and provides general information about water issues for groups, civic organizations and associations.

OMWD began hosting Water Expos to educate the community on the impacts of Southern California's water supply shortage and to assist residents in saving both water and money. Expos were held in partnership with a homeowners association in OMWD's service area. OMWD officials explained how water supply issues affect residents and local vendors donated their time and resources to provide free landscape classes, create interactive booths, answer gardening questions and showcase the latest in irrigation technologies.

OMWD formed VOCAL (Voice Of the Consumer At the Local Level), a consortium of retail water agencies and various stakeholders that gave local urban retail water agencies a voice in Sacramento.

The San Diego economic outlook remains relatively unchanged from 2010 with a slow to moderate growth into the first half of 2011, according to the latest leading economic indices published in June 2010 by the Burnham-Moores Center for Real Estate at the University of San Diego. The indices show that San Diego County's indicators were up slightly at 109.4 compared to the previous one at 109.2. Their study states that residential units authorized by building permits hit the highest level since 2009; initial claims for unemployment insurance were negative for two consecutive months indicating fewer jobs were lost.

The challenge will be whether or not these small signs of economic improvement will persist following a new wave of future home foreclosures, as laid-off workers default on mortgages, and a pullback by federal economic stimulus programs which will impact local construction activities. One potential problem impacting the recovery of local economies is the fiscal problems faced by all level of government, particularly significant budget deficits experienced by the State of California and the City of San Diego. Since proposed tax increases were voted out, there are likely to be cuts in state services and employment.

Recession has somewhat hurt OMWD's revenue picture, especially if employment figures continue to suffer in the short term, but will be less severe in comparison to some water agencies in the county. OMWD's role as the retail water purveyor to an affluent service area based on per capita assessed valuation in the high $265,000 provides a high degree of revenue stability. OMWD's Finance Department prepares budget summary reports and unaudited financial statements on a monthly basis for Board review. Each quarter, the Finance Committee, comprised of OMWD's Treasurer, one Board member, and staff members appointed by the General Manager, reviews OMWD's financial data and/or investments.